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AN OVERVIEW
OF
ACTIVITY MASTER PLANNING
IN THE UNITED STATES NAVY

BY
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A REPORT PRESENTED TO THE GRADUATE COMMITTEE
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CHAPTER ONE

INTRODUCTION

1.1 Overview

The objective of this report is to provide an overview of activity master planning in the United States Navy. First, definitions, key players, and funding are addressed. The history of urban planning is reviewed due to its parallels with Navy master planning. Some general problems associated with planning are then discussed.

From this basis an overview of the master planning document and steps for completion are outlined.The following chapters are devoted to specific sections of the master plan including requirements analysis, analysis of constraints, concept development, and results. Two master plan developments from the 1960's and one from the 1980's are reviewed to show various considerations when producing a master plan. The final chapter covers some challenges involved with creating the best working document.

1.2 Definition

For many years, United States Naval bases were constructed to meet current needs and missions without regard to any long range planning. In other words no overall planning was invoked

to construct the activities in a logical fashion. During and after World War II, the naval base in Argentia, Newfoundland, grew tremendously and problems developed due to this lack of planning. Reviewing the overall disorganization at Argentia spurred the Navy to begin developing the concept of master planning.

Master planning is defined as the "scientific art of comprehensive planning performed for an activity or a complex of activities to assure the timely and orderly physical development of facilities required to support present and future military operations" (9:4-41). The idea behind the master planning process is to integrate the environment of the base into a logical "whole". The base environment includes natural resources as well as man made structures and operational requirements. It also includes any areas of mutual interest with the surrounding community.

The master plan becomes the official planning document for the activity after it is approved by the Chief of Naval Operations. It details the present composition of the base in graphic and narrative forms and outlines the development needed to meet the mission and operational workload of the activity. The plan also provides information for the expansion capability of the base in terms of structures to meet an increased or additional mission. The master plan is the basis for all planning recommendations and proposals. It provides the continuity between changes of command and individuals.

1.3 Players

As mentioned previously, the Chief of Naval Operations (CNO) has final approval of the master plan, yet it is the basis for planning for the activity. Between the CNO and the activity are several levels of review and support. Outlined in Figure 1 are the chains of command for facilities matters in the Navy (9:1-13). The main players in the master planning process are the public works department (PWD) at each activity and the various Engineering Field Divisions (EFD's . The EFD is a field representative of the Naval Facilities Engineering Command (NAVFACENGCOM). NAVFACENGCOM provides technical assistance and automatic data processing support for facilities planning and programming.

NAVFACENGCOM has developed a program to produce comprehensive master plans. The appropriate EFD prepares the master plan using an in-house team or contracting with an Architect-Engineer firm. (There are six EFD's that support all the Navy and Marine Corps bases throughout the world. Each activity is assigned to a specific EFD depending on the region in which it is located.) The activity, through the PWD, participates in the master plan development to ensure that the end product is a document that supports the planning requirements for the base. The PWD provides guidance on current facility sites and arrangements.

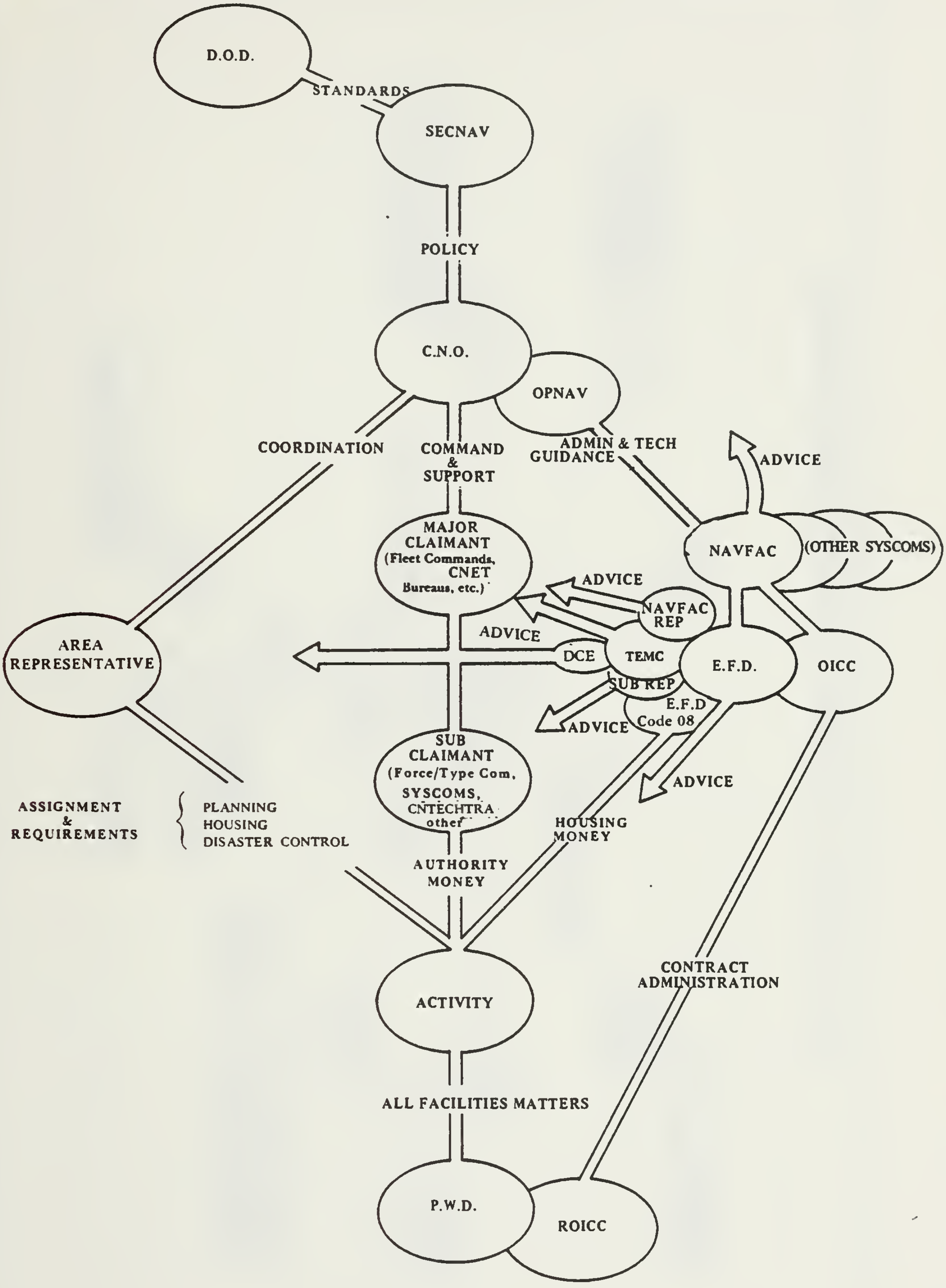
Both the draft and the final master plan are reviewed by NAVFACENGCOM, the sub-major claimant and the major claimant. The claimants are those commands that provide the activity with authority and funding. They are considered the formal chain of command for the activity while the EFD and NAVFACENGCOM are available for technical support and assistance. In some cases, depending on the effect of the master plan on the surrounding community, various local, state, and federal agencies will also review the master plan. After the review process is completed, the CNO gives final approval. Figure 2 outlines the responsibilities for the various levels in the chain of command (9:4-1). Many of the responsibilities will be discussed later.

1.4 Funds and Updates

Preparation of an activity master plan is usually done at no cost to the activity. During the creation of the NAVFACENGCOM budget, funds are set aside to support the EFD. If the plan development exceeds the scope as outlined in NAVFACENGCOM instructions, the activity may be requested to reimburse the EFD for those costs. The actual cost of a master plan depends upon the size and location of the activity.

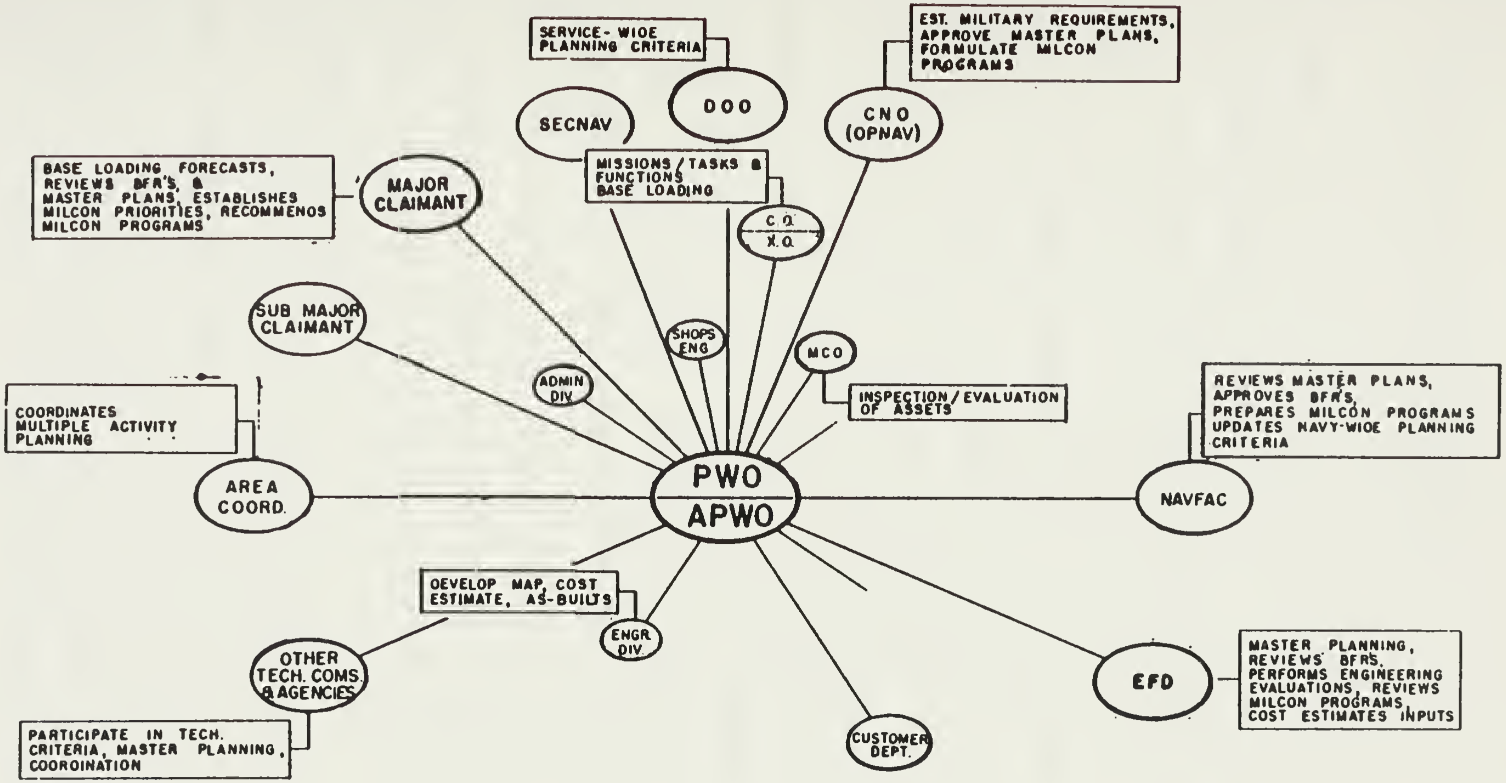
Master plans should be updated every six years by the EFD. During the update the planners rework and revise every aspect of the plan to make it current. If a base is rapidly changing,

master plans may be updated before the end of the six year cycle.



CHAINS OF COMMAND FOR FACILITIES MATTERS

Figure 1


SERVICE-WIDE PLANNING CRITERIA
DOD
SECNAV
EST. MILITARY REQUIREMENTS, APPROVE MASTER PLANS, FORMULATE MILCON PROGRAMS
CNO (OPNAV)
BASE LOADING FORECASTS, REVIEWS BFR'S, & MASTER PLANS, ESTABLISHES MILCON PRIORITIES, RECOMMENDS MILCON PROGRAMS
MAJOR CLAIMANT
MISSIONS/TASKS & FUNCTIONS BASE LOADING
C.O.
X.O.
SUB MAJOR CLAIMANT
SHOPS ENG
MCO
ADMIN DIV
INSPECTION/EVALUATION OF ASSETS
REVIEWS MASTER PLANS, APPROVES BFR'S, PREPARES MILCON PROGRAMS UPDATES NAVY-WIDE PLANNING CRITERIA
COORDINATES MULTIPLE ACTIVITY PLANNING
AREA COORD.
PWO
APWO
NAVFAC
DEVELOP MAP, COST ESTIMATE, AS-BUILTS
ENGR. DIV.
OTHER TECH. COMS. & AGENCIES
PARTICIPATE IN TECH. CRITERIA, MASTER PLANNING, COORDINATION
EFD
MASTER PLANNING, REVIEWS BFRS, PERFORMS ENGINEERING EVALUATIONS, REVIEWS MILCON PROGRAMS, COST ESTIMATES INPUTS
CUSTOMER DEPT.

THE PLAYERS IN FACILITIES PLANNING AND PROGRAMMING

Figure 2

CHAPTER TWO

OVERVIEW OF PLANNING

2.1 History of Urban Planning

In many ways, a naval base can be compared with a small (sometimes medium-sized) town. It contains residential areas, shopping facilities, general services such as post offices, utility services, and industrial areas which may include airfields and port facilities. Base populations can range from less than 3,000 to 30,000 people, most of whom only work at the activity. The area can cover up to 500 square miles. Most of the structures are publicly-owned with the exception of some banks and restaurants. The base and its surrounding area are mutually dependent on each other. The surrounding community provides personnel, housing, recreation, and other services. The base provides employment and personnel interested in civic responsibilities. Because of these parallels and mutual dependency, the history of base planning can be derived from the history of urban planning.

City planning in one form or another has been practiced for many centuries. It can be traced back to the cities of the Greek and Roman empires as well as many Asian empires (21:11). These cities were planned to center around religious facilities or palaces and were designed to ac-

commodate the ruling classes. This planning ideal was used until a few hundred years ago when it was replaced by the need to protect the population against invasions. At this time, designs ensured that the population lived closely together within fortified walls. Cologne and Vienna are excellent examples of "invasion planning".

Soon the need to fortify against invading forces was no longer valid and many plans were redesigned to include extensive boulevard systems to connect various areas of the community. Two prime examples are Paris and Washington, D.C. One of the more advanced urban planning movements occurred in the late 1700's in Germany where the design of wide streets, the acquisition of large tracts of land and the requlation of building heights became the norm. Another planning ideal that gained acceptance in the United States at approximately the same time was the checkerboard pattern used by William Penn in planning Philadelphia. The checkerboard pattern essentially is a grid pattern where the streets are parallel and perpendicular to each other.

With the advent of the automobile, the emphasis turned to transportation planning. The focus shifted to moving the population from one area to another on the city's streets and highways. Soon it was realized that land use, city attractiveness, and comfort for the population as well as other considerations should be included in the plans, so the concept of comprehensive planning (also known as gen-

eral or master planning) was born. Comprehensive planning involved looking at the comprehensive picture for an area. This included land use patterns, traffic patterns, transportation access, recreational facilities, educational facilities and utility systems. Building on the concept of comprehensive planning, regional planning evolved to incorporate those planning problems such as flood control which involved several geographical areas. The development of these planning concepts soon increased the utilization of planning throughout the United States. Planning models were devised to use techniques efficiently and effectively and emphasis on the planning process was increased to ensure that plans would not stagnate because of rapidly changing conditions.

2.2 Planning Process

"Planning is the process of preparing a set of decisions for action in the future directed at achieving goals by optimal means and of learning from the outcome about possible new sets of decisions and new goals to be achieved" (13:12). According to this definition by Dor, the plan itself becomes the outcome of the planning process.

Frequently, attention is focused on the plan instead of the process. As a result the process sometimes takes years to achieve an outcome whose validity is often not

questioned. The plans are prepared with the belief that they will work almost 100 percent, but the plan itself will not be completely valid because of three sources of obsolescence: (1) the plans are based on faulty forecasts due to the fact that the future can not be adequately predicted, (2) they can not account for changing goals, aspirations, or missions, and (3) under no circumstances can a plan even begin to account for the unexpected (13:13).

The end result is that the plan reflects the realities of the time in which it was developed. Some use the outcome and implement it with a "no holds barred" approach, discounting any future events. Others deny the plan's existence and work completely with a "day by day" approach. The lesson to be learned is that the process of planning should include the concept that something, whether it be goals, missions, or unexpected circumstances, will change the plan. Therefore the process should be adaptive to changing conditions.

2.3 Planning Models

Six major planning models have been developed over the years that are variations of the cycle shown in Figure 3. The six models are (1) pure rationality, (2) economic rationality, (3) sequential decision, (4) incremental change, (5) satisfying and (6) extra rational processes (13:16).

The pure rationality model includes six phases. The first step is to determine all the required goals and assign relative weights to them. Next, other resources and objectives are determined along with their relative weights. A complete set of alternatives are prepared and the costs and benefits for each alternative are produced. The net expectation for the alternative is calculated by multiplying the probability of each benefit and cost by the utility and determining the net benefit. The last phase is to identify the alternative with the highest net expectation.

The drawbacks to the pure rationality model are obvious. In most cases a complete set of goals is impossible to determine due to changing expectations of the persons and missions involved. There are too many variations on the alternatives to make it practical to prepare a complete set. It is also virtually impossible to determine all the tangible and intangible costs and benefits associated with each alternative. In fact, the more complete the alternative set, the less likely costs and benefits can be determined.

The economic rationality model is a variation of the pure rationality model. It follows the same six phases, but each step is completed only whens the cost of preparation is less than the benefit to the outcome. In other words, the pure rationality model is followed as long as it is

economical to do so. This model has many of the same drawbacks as the pure rationality model. It is difficult to determine the costs and benefits involved to gage how far each step is to be taken.

The third planning model, sequential-decision, includes the concept of evaluation uncertainty. The basic theory is that information needed for evaluation of an alternative is unobtainable until the initial stages of an alternative are carried out. Therefore the more attractive alternatives would be undertaken in a systematic manner to provide evaluation data. Certain areas of operation essentially become "guinea pigs" for trying different policies and programs. The model is useful for those areas where choices are difficult due to effect uncertainties. Unfortunately, the costs involved in setting up trial areas may preclude the use of this model.

The incremental change model was developed from "real world" observations by Braybrooke and Lindbloom. They perceived that decisions are not made in a rational manner that includes the entire desired outcome, but rather incrementally, with small changes. Decisions are made to solve problems, not move towards goals. They are also approached successively and are considered fragmented because a limited set of alternatives are involved. The decisions become exploratory with the goals being redefined at each step.

The satisfying model involves several stages in searching for an appropriate alternative. The first stage is identification of obvious alternatives that are based on recent experience. Each alternative is evaluated in terms of quality and payoff. If an alternative is discovered to have a satisfactory payoff, then it is implemented. If no alternatives are found to have the desired payoff, less obvious, possibly more innovative, alternatives are considered until one is found that has a satisfactory payoff or expectations are lowered. Both the incremental change and satisfying models reflect the way many decisions are actually made if extra rational processes are included.

The last model, extra rational, removes rationality as a basis for determining optimal alternatives and replaces it with extra rational processes such as intuition and judgement. The essential point to this model is how to create conditions that allow rational and extra rational processes to work together. The extra rational processes become essentially those processes that use an intuitive knowledge of the world based on experience. In certain respects, this model comes close to reflecting reality.

All the stages delineated by each model do not occur as separate steps. Each stage is closely interrelated with the others along with any political policies that may influence the choice of alternatives and the ultimate decision.

All the planning models stress a valid point. Planning must be viewed as a continuous process that produces uncertainities and obsolescence. Any plan developed today will be obsolete by tomorrow because of changing conditions and improved knowledge. Another point brought out by the models is that the planning process should be goal oriented.

2.4 Composition Problems

In applying planning processes or models to the concept of comprehensive plans or master plans, composition problems are the most prevalent challenges. The problems of composition (putting together parts of the whole) fall into three main categories (17:373). The first is the challenge to combine the objectives from many diverse groups, individuals or policies into a comprehensive whole. The second problem of composition results from the fragmented authority of the many agencies responsible for planning. This extends even into budget responsibilities. Coordinating the planning process in all these areas represents a major challenge. The third class of composition problems occur when the community is viewed as separate parts instead of a functional whole. Planners still tend to view systems as fragmented and fail to consider other aspects that may influence the objectives and goals.

3.5 Master Plan Ideology

This emphasis on goals and objectives (specific steps to obtain a goal) in the development of master plans provides the momentum to concentrate on the planning process versus rigid standards and regulations. From this point the goals and objectives can be used to create a framework which is purpose oriented, reflects the political values at any time, and is adaptive to change. The master plan itself can be defined as the official statement that sets down major policies concerning future development of the area. The plan using the process framework includes a single, unified community design and clarifies any relationships between the defined goals. The success of the master plan then depends on how it is implemented.

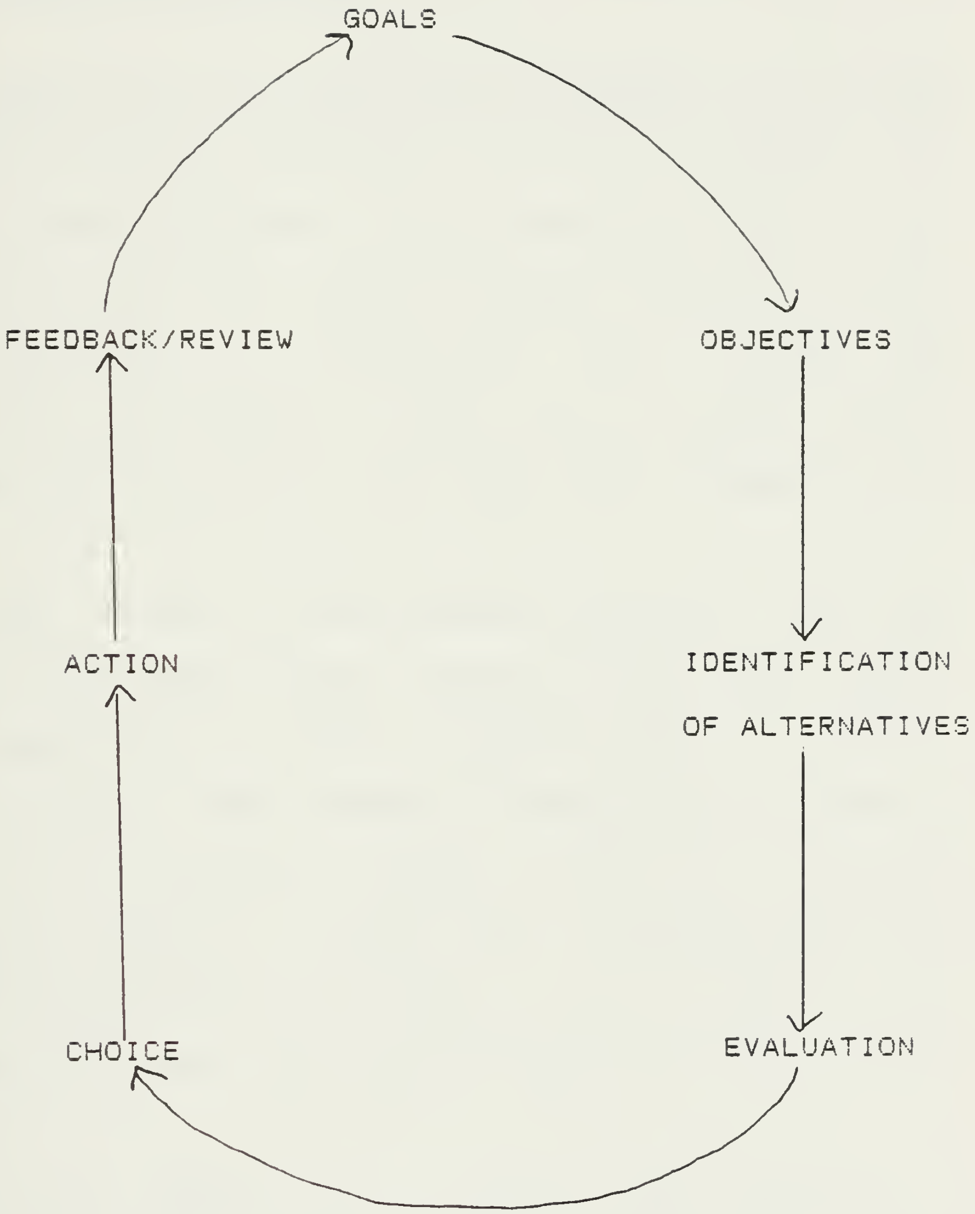
According to Kent, the master plan (or general plan as he refers to it) contains at least five basic physical elements; land use, circulation, community facilities, civic design, and utilities (19:18). Land use refers to those areas that are used for living and working such as bachelor quarters and rework facilities. Circulation covers the transportation system and community facilities deal with public activities such as recreational facilities and schools. Civic design focuses on the aesthetic features of the area. The utilities element of the master plan deals with electrical, water, sewage and other utility systems.

In addition, each plan covers any specific needs for the community. For example, sections in the plan may deal with historical districts or waterfront redevelopment.

2.6 Overview Conclusion

From the planning techniques, models, and lessons learned in urban planning, the Navy developed its facilities planning and master plan processes. The facilities planning process, to be discussed later, is continually updated as new knowledge is gained and as conditions change. It never remains a stagnant process.

Since activity master plans are updated every six years, they do contain the possibility of stagnation. Each plan is created from the basic outline, but is also built upon previous master plans and other studies. They contain the basic master plan ideology outlined previously and follow the planning process in Figure 3.



The Basic Planning Process

Figure 3

CHAPTER THREE

OUTLINE OF A MASTER PLAN

3.1 Master Plan Outline

The Naval Facilities Engineering Command has outlined the elements that are required in an activity master plan (8:2). The major sections will be discussed later in further detail. The first elements; executive summary, table of contents, list of illustrations, list of tables, and introduction, are the usual items for any systems study. Any assumptions and ground rules should be included at this point.

The next element is requirements analysis. This section covers the base mission (reason for the base's existence), organization, and base loading (number of aircraft, ships, et cetera). Base loading forecasts are provided to the activity by the major claimant. Analysis of existing and required assets as provided by the Shore Facilities Planning System and any concurrent or future studies in the area that may affect the use of the facilities are included.

The fifth section in a master plan consists of existing conditions. A description and analysis of the activity and surrounding area are provided. Any constraints, either manmade or natural, that will affect land use are

analyzed. The constraints may include historic sites, Air Installations Compatible Use Zones, community political climate and activity infrastructure. This is followed by the development of concepts. This section outlines various planning concepts that utilize the constraints determined previously. The final recommended concept must be realistic and capable of being implemented. Cost data should be included.

There are four major results of an activity master plan; proposed land and facility use, preliminary environmental assessment, energy conservation plan, and capital improvements plan. The section on proposed land and facility use features graphics that illustrate the recommended use of the activity's facilities. The surrounding area should be considered along with the capability of the activity to expand during times of mobilization or mission change. Long range planning considerations should be included. A preliminary environmental assessment that defines the environmental impact of the planning proposals must be incorporated in the master plan.

The energy conservation plan of the activity demonstrates that energy conservation concepts have been utilized in the planning analysis. It includes base-wide energy systems and conservation concepts. The fourth result, the capital improvements plan, documents the projects necessary to implement the master plan. It provides siting,

cost data, and any phasing requirements. The remaining sections of the master plan are reserved for bibliographies and appendices as needed.

Appendix A provides an outline of the proposed master plan for Naval Air Station, Jacksonville, Florida (20).

3.2 Master Plan Process

Figure 4 outlines the process used in the development of a master plan (7:B-3). It basically follows the outline prescribed by NAVFACENGCOM. Goals and objectives are established at the beginning of development with data collection following. Facilities requirements and existing conditions are analyzed and concept alternatives are produced that recommend land and facility uses. When the concept is completed, the capital improvements plan, the environmental assessment and the energy conservation plan are created. Preliminary, draft, pre-final and final master plans are submitted at various stages of development.

3.3 Complex Master Plans

Emphasis has been placed on the development of activity master plans, but the Naval Facilities Engineering Command also has responsibility for development of complex master plans (7:2). Complex master plans are utilized in

areas where there are two or more major activities or where an activity has outlying areas of responsibility not physically connected to the main base. The complex plan differs from an activity plan only in one respect. It contains a section which deals with any common elements between the activities being studied. The elements could cover community and environmental planning, activity interrelationships and dependencies, logistical support, and possible encroachment problems. The complex section is utilized to avoid unnecessary cost in preparing background data for the activities due to the fact that many issues affect all the activities in the complex.

3.4 First Step in Development

The first step in developing a master plan is coordination with the activity. Whether the plan is being developed by an Engineering Field Division team or an Architect-Engineer firm, the planners gather the necessary data to determine the overall function of the base and its organization. Interviews are arranged with all the commands on base which in some cases may be a momentous task. For instance, Naval Air Station, Jacksonville has 74 tenant commands. Tenant commands are those commands located on the base that have a separate commanding officer and chain of command. The planners analyze the interrelationships be-

tween the various commands and departments. The planners also determine what areas they occupy for use in the requirements analysis section of master plan development.

Appendix B provides an outline of some of the considerations involved in data collection for the first step in development.

MASTER PLAN PROCESS

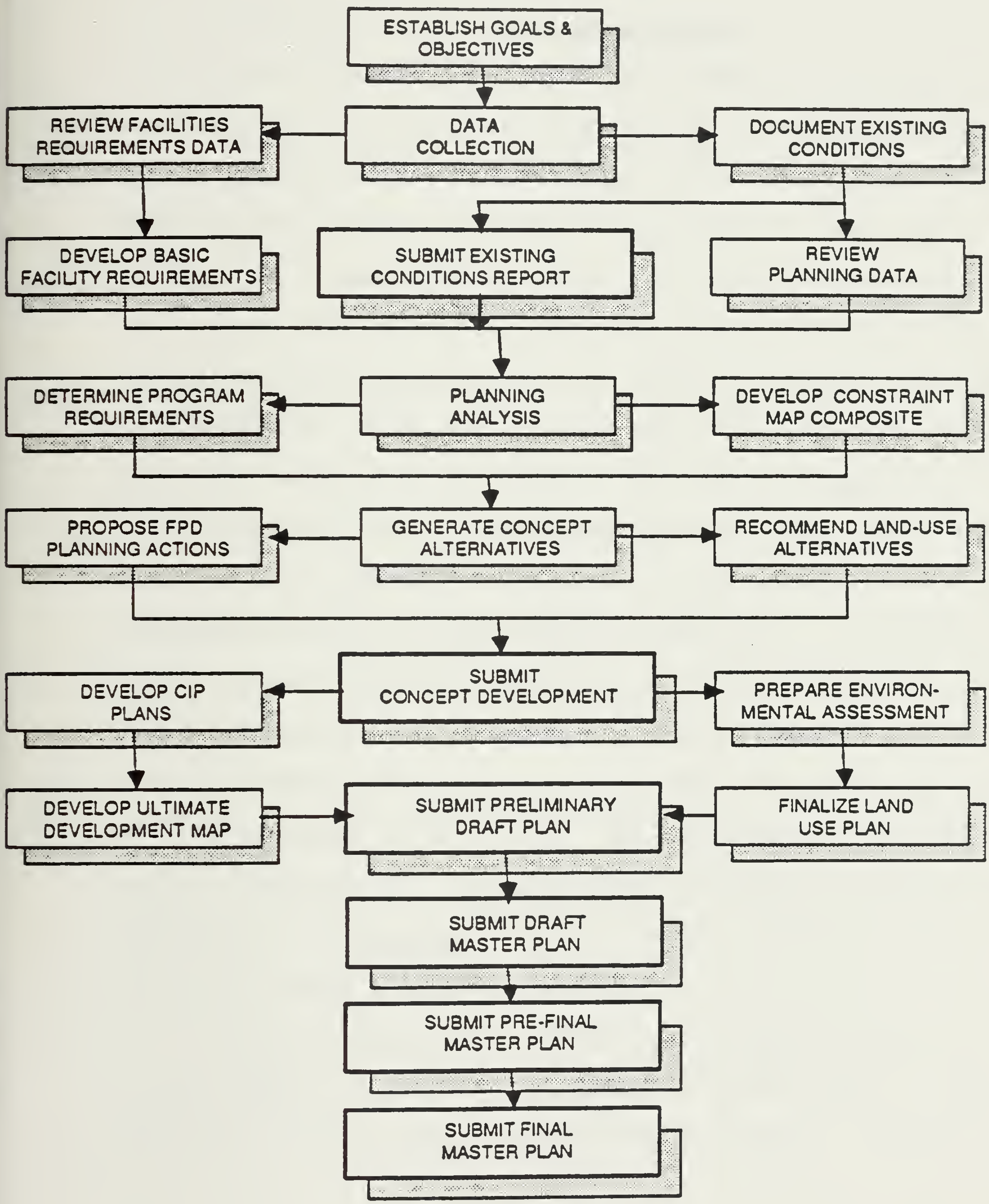

ESTABLISH GOALS & OBJECTIVES
DATA COLLECTION
REVIEW FACILITIES REQUIREMENTS DATA
DOCUMENT EXISTING CONDITIONS
DEVELOP BASIC FACILITY REQUIREMENTS
SUBMIT EXISTING CONDITIONS REPORT
REVIEW PLANNING DATA
DETERMINE PROGRAM REQUIREMENTS
PLANNING ANALYSIS
DEVELOP CONSTRAINT MAP COMPOSITE
PROPOSE FPD PLANNING ACTIONS
GENERATE CONCEPT ALTERNATIVES
RECOMMEND LAND-USE ALTERNATIVES
DEVELOP CIP PLANS
SUBMIT CONCEPT DEVELOPMENT
PREPARE ENVIRON-MENTAL ASSESSMENT
DEVELOP ULTIMATE DEVELOPMENT MAP
SUBMIT PRELIMINARY DRAFT PLAN
FINALIZE LAND USE PLAN
SUBMIT DRAFT MASTER PLAN
SUBMIT PRE-FINAL MASTER PLAN
SUBMIT FINAL MASTER PLAN

Figure 4

CHAPTER FOUR

REQUIREMENTS ANALYSIS

4.1 Shore Facilities Planning System

Before a master plan for a naval base or region can be developed, various aspects of the U.S. Navy Shore Facilities Planning System (SFPS) must be reviewed and, if necessary, corrected. The SFPS was designed in the 1950's in response to a need to identify current naval facilities. Up until that time, very few bases had catalogued their facilities to determine the current level of support provided to operational units and to also determine what facilities would be needed in the future. The first attempts at defining existing facilities appear to have occurred in conjunction with CINCPACFLT (Commander in Chief Pacific Fleet) and SERVPAC (Service Force Pacific Fleet) (2). A review of Pacific supply depots resulted in a realization that, although each depot had developed a base responsibility plan to outline their mission and responsibilities, information on their support facilities was scattered throughout various departments. A coordinated planning effort was needed to pull together the information, so the concept of shore facilities planning was born.

The basic idea of the SFPS is to identify the facilities needed to support the seapower mission and to help manage the Navy's shore establishment (9:4-13). From the

SFPS, the planner for the base can identify the correct surpluses and deficiencies in the facilities. The logic of the system is outlined in Figure 5 (9:4-14). The facility requirements, which are based upon the mission of the activity, are compared against the existing facility assets. If deficiencies are found to exist, military construction and other projects are developed to correct them. Excess facilities are either transferred to other areas or disposed.

All existing facilities on a base are analyzed and divided into category codes that have been organized by NAVFACENGCOM. Each category code is a five digit number that reflects the purpose of the area being analyzed. For example, enlisted personnel housing, airstrips and public works facilities each have their own category code number.

The elements of the SFPS are outlined in Figures 6 (9:4-17) and 7 (11:4521-1). Information on the existing facilities organized by their category code number are contained in the Navy Facilities Assets Data Base (NFADB). Each facility is evaluated to determine if it is inadequate, adequate or substandard in comparison to its intended use using engineering evaluation (EE) worksheets. Using these worksheets for each facility and category code on the base, the existing assets are compared against the requirements.

Facility requirements are determined initially by the mission of the base. They are developed through the use of the NAVFAC P-80, Facility Planning Factor Criteria for the Navy and the Marine Corps Shore Installations. The P-80 is broken into category codes and describes the steps to calculate the basic facility requirement (BFR) which is compared against the existing assets in a facility planning document (FPD). As an example, Figure 8 details a FPD for NAS Whitehall (11:4521-2). The document shows all areas in the facilities that are considered to be involved with applied instruction, category code 171-20. The BFR was calculated as 38,677 square feet as compared with a deficiency of 18,000 square feet. The facility detail indicates those areas already in use by the base and those areas that are planned for the future.

4.2 Facilities Requirements Plan

The FPD is the primary document for the SFPS and is one of the three components of the Facilities Requirements Plan, the other two being the facilities requirements plan summary and the activity general information (9:4-16). The facilities requirements plan summary lists all the category codes for which a FPD exists for the base. The summary covers the facility requirements for each category code, existing facility deficiencies and surpluses, and any defi-

ciencies that will exist after proposed projects are completed. Figure 9 (9:4-19) outlines a sample facilities requirements plan summary.

The activity general information listing (Figure 10) is the third component of the Facilities Requirement Plan (11:4521-2). It contains information on the chain of command for the activity and lists all the tenant commands. It also lists any real estate not attached to the base for which the commanding officer is responsible. With these three components the Facility Requirements Plan can be combined with the activity's master plan to determine what acquisitions or disposals are required to correct the facility surpluses and deficiencies that have been identified.

4.3 Inputs to the SFPS

Input into the Shore Facilities Planning System begins at the activity with several levels of review before the input is validated. Engineering evaluations are performed by the Engineering Field Divisions who have the responsibility for administering the SFPS. The facility planning documents are originated at the activity and reviewed by the EFD, NAVFACENGCOM, and the major claimant before approval. The EFD and its parent command, the Naval Facilities Engineering Command, are also responsible for pub-

lishing planning regulations for the implementation of the SFPS. The EFD will initiate reviews of the Engineering Evaluations when necessary.

The operational chain of command, i.e. the major claimant, reviews planning submissions to ensure that the plans are consistent with existing and proposed operational needs. The operational chain of command ultimately will fund projects to correct facility deficiencies or will support major programs such as military construction. The submittal routes for the BFR's are outlined in Figure 11 (9:4-22).

4.4 Requirements Analysis

The next step in master plan development is the requirements analysis. Using the information gathered in the first step of development and the current data in the SFPS, the planner verifies the adequacy of the engineering evaluations and the facility planning documents. Each building is reviewed as to its square footage, user, and adequacy for that user. This data is then compared against the engineering evaluation and any property records for the activity. While the EE's are being updated, each basic facility requirement is recalculated using base loading information, the P-80 and any other criteria. Once the basic requirements have been approved, they are compared against

the EE's, and the revised facility planning documents may be produced. At this point, the constraints on the master plan are analyzed.

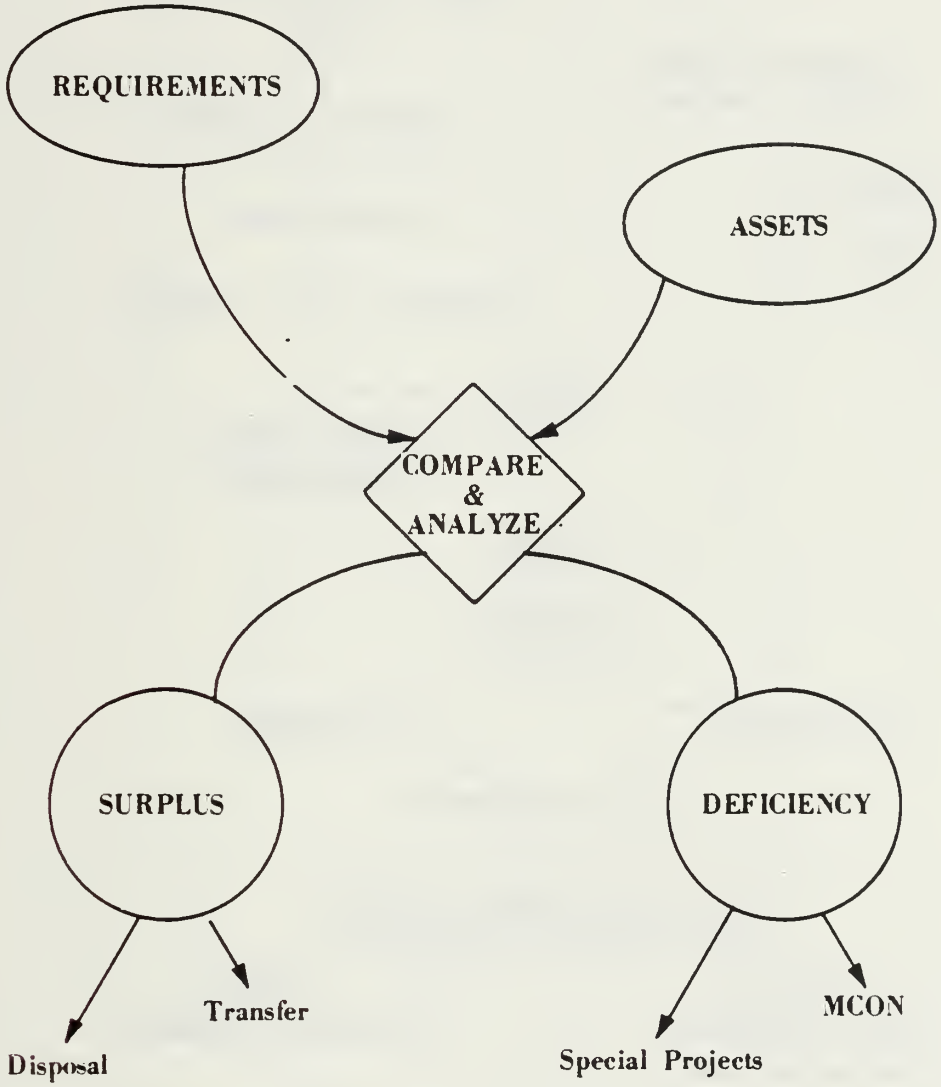


FIGURE 5
THE SHORE FACILITIES PLANNING SYSTEM

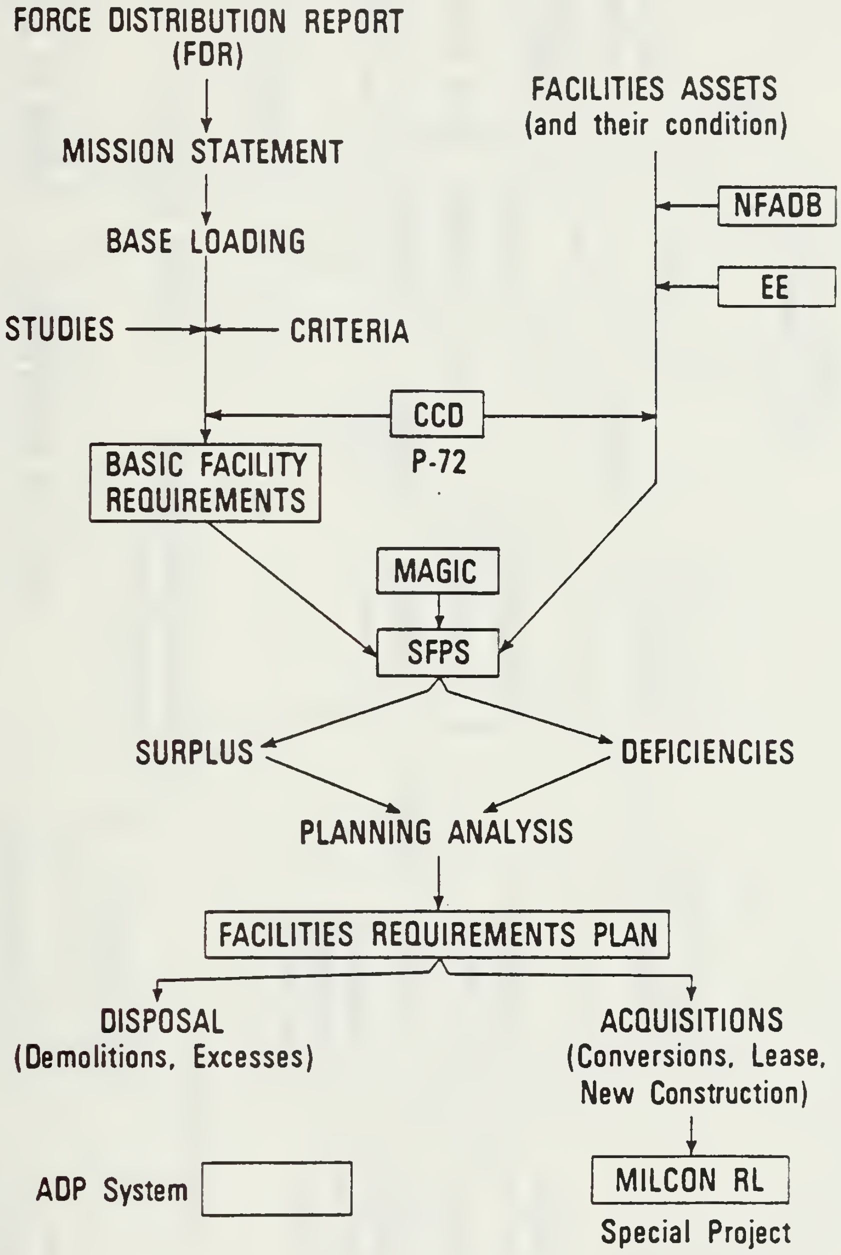
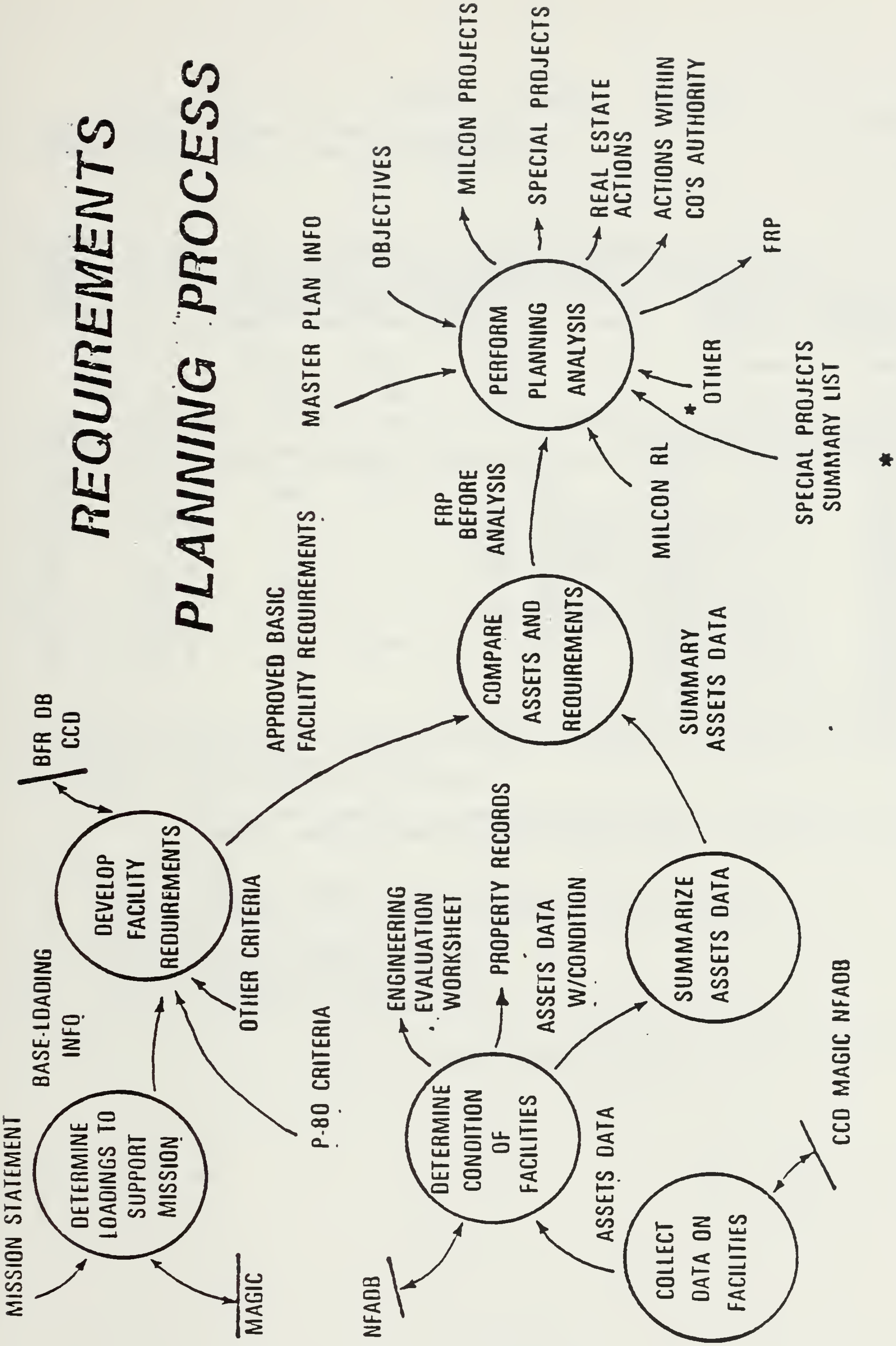


FIGURE 6
SHORE FACILITIES PLANNING SYSTEM COMPONENTS AND RELATIONSHIPS

REQUIREMENTS PLANNING PROCESS


MISSION STATEMENT
MAGIC
DETERMINE LOADINGS TO SUPPORT MISSION
BASE-LOADING INFO
DEVELOP FACILITY REQUIREMENTS
BFR DB
CCD
P-80 CRITERIA
OTHER CRITERIA
APPROVED BASIC FACILITY REQUIREMENTS
NFADB
DETERMINE CONDITION OF FACILITIES
ENGINEERING EVALUATION WORKSHEET
PROPERTY RECORDS
ASSETS DATA W/CONDITION
ASSETS DATA
COLLECT DATA ON FACILITIES
CCD MAGIC NFADB
SUMMARIZE ASSETS DATA
SUMMARY ASSETS DATA
COMPARE ASSETS AND REQUIREMENTS
FRP BEFORE ANALYSIS
MILCON RL
SPECIAL PROJECTS SUMMARY LIST
* OTHER
MASTER PLAN INFO
OBJECTIVES
PERFORM PLANNING ANALYSIS
MILCON PROJECTS
SPECIAL PROJECTS
REAL ESTATE ACTIONS
ACTIONS WITHIN CO'S AUTHORITY
FRP

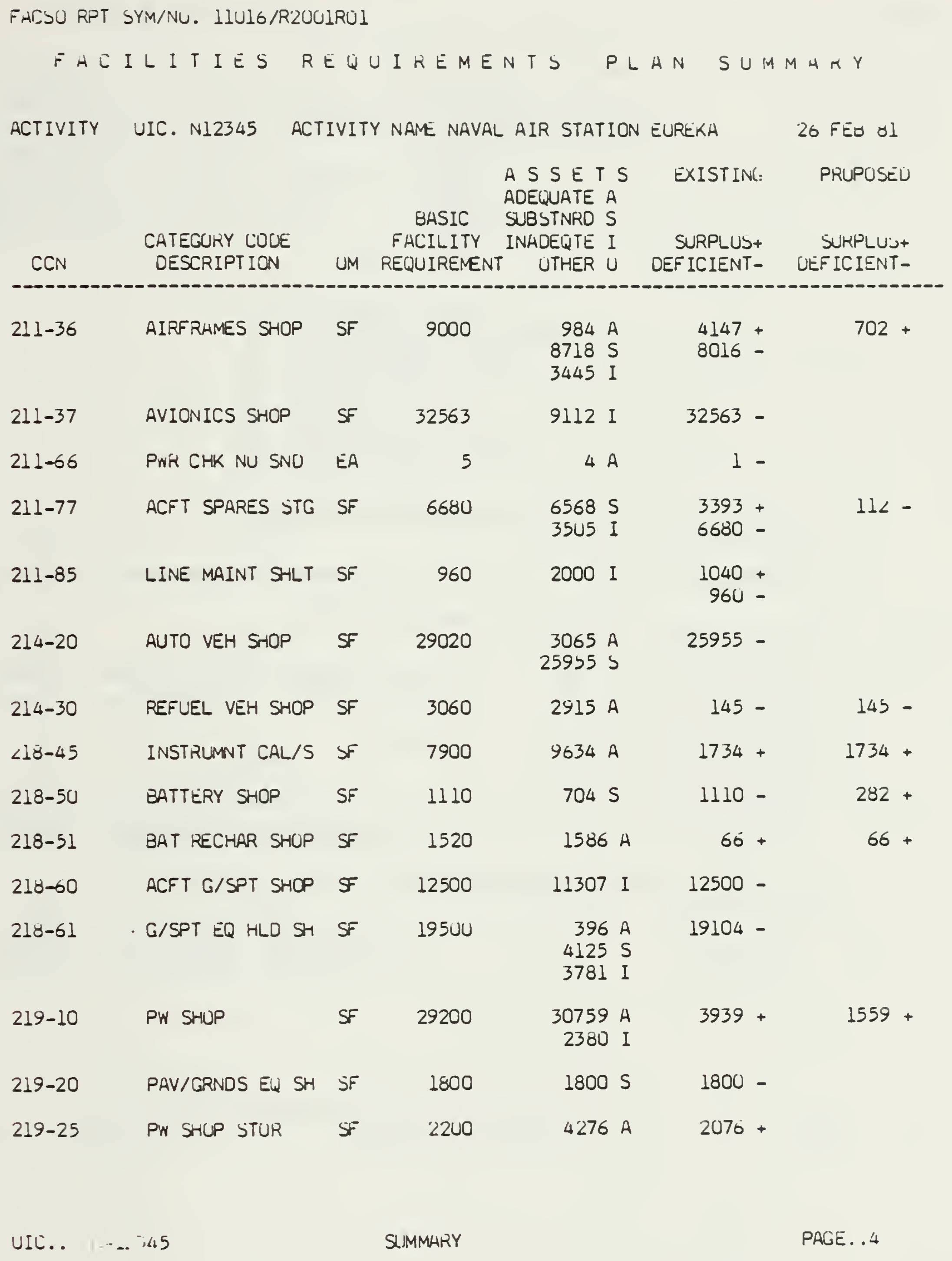
* UTILITIES IMPROVEMENT PROGRAM, FIRE PROTECTION SURVEY, ENERGY CONSERVATION PLAN, ANNUAL INSPECTION SUMMARY, ETC

BFR---BASIC FACILITY REQUIREMENT
CCD---CATEGORY CODE DIRECTORY
FRP---FACILITIES REQUIREMENTS PLAN
MAGIC---MASTER ACTIVITY GENERAL INFO CONTROL
NFADB---NAVY FACILITY ASSETS DATA BASE

Figure 7

```
                              FACILITY   PLANNING    DUCUMENT
                                                                    79MAR26
ACTIVITY UIC... N02542  NAME... NAS WHITEHALL
SPECIAL AREA... BA      NAME... AROMUORE



CATEGURY CUDE.. 17120   DESCRIPTION.. APPLIED INSTRUCTION BLDG
RQMTS DATE.. 19 MAR 79 LATEST CHANGE DATE.. 19 MAR 79 EFD CERT DATE..
-----------------------------------------------------------------------------
BASIC              FACILITY  ASSETS  DATA                   QUANTITY  QUANTITY
FAC RQMT  UM  ADEQUATE  SUBSTNRD  INADEQTE      OTHER      DEFICIENT  SURPLUS

   38677  SF*     20677      9800     23401                     18000     15201

     320  MN        140        40       160                       180        20
-----------------------------------------------------------------------------
FACILITY DETAIL                                          SATISFACTION OF DEF/SURP
FAC NO   U EE C ADEQUATE SUBSTNRD INADEQTE DEF CODES ACTIUN IO     D     SCOPE NT
212        N 77 P               7500           A24       RENUV  P-123 +    7500 01
213        N 77 P     3000                     C45       USE          +    3000
215        N 78 S                        2600 A30826A01 CUNVTO 21910 -    2600
216        Y 77 T                        2100 A30826A01 DISPOS VAC   -    2100
221        N 77 T                        1729 A30826A01 DISPOS VAC   -    1729 03
223        Y 77 S                        8024 A30826A01 OUTG-C       -    8024 02
231        N 78 P    11000                     C40       MODIFY P-124 +   11000 04
242        N 78 P                        7024 A30826A01 DISPOS VAC   -    7024
247        N 78 S                        1924 E05A30826 DEMOL  VAC   -    1924 05
323        N 78 S               2300           A24       RENOV  P-123 +    2300 01
342        Y 78 P     6677                               OUTG-R       +    6677 06
    ACQ                                                  CUNSTR P-134 +    8200
                                                                  ---------------
                                   TOTAL PRUPUSED ADEQUATE ASSETS =      38677
-----------------------------------------------------------------------------
NUTES FOR CATEGORY CODE.. 17120
STD NOTES:  PENDING NAVFAC HQ APPROVAL

GEN NOTES:  REQUIREMENT REPRESENTS CONSULIDATION OF 17120 AT SPECIAL AREAS
            DA AND BA, SPECIAL AREA DA IS TO BE EXCESSED

FPD ACTION NOTES:
01   P-123 WILL REPAIR ROOFS OF FAC #212 AND #323
02   CONTINUE OUTGRANT OF FAC #223 TO MCDOUGALL ACFT, TERM DTE
     30 SEPT 85
03   DEMOLITION TO BE ACCOMPLISHED BY CBU 441
04   P-124 WILL CORRECT USMA DEFICIENCY
05   FAC #247 TO BE DEMOLISHED BY P-134
06   TERM UUTGRANT OF FAC #342, SOUTHROP ACFT, TERM DTE 30 SEP 79

-----------------------------------------------------------------------------
                        END DATA FOR CATEGURY CUDE 17120



UIC.. N02542  BA                    FPD                 CCN.. 17120   PAGE..  1
```

Figure 8



```
FACSO RPT SYM/NO. 11016/R2001R01

   F A C I L I T I E S   R E Q U I R E M E N T S   P L A N   S U M M A R Y

ACTIVITY   UIC. N12345   ACTIVITY NAME NAVAL AIR STATION EUREKA      26 FEB 81

                                                A S S E T S   EXISTING    PROPOSED
                                                ADEQUATE A
                                         BASIC  SUBSTNRD S
               CATEGORY CODE          FACILITY  INADEQTE I    SURPLUS+    SURPLUS+
  CCN           DESCRIPTION     UM  REQUIREMENT  OTHER U    DEFICIENT-  DEFICIENT-
----------------------------------------------------------------------------------

211-36      AIRFRAMES SHOP    SF       9000        984 A      4147 +       702 +
                                                  8718 S      8016 -
                                                  3445 I

211-37      AVIONICS SHOP     SF      32563       9112 I     32563 -

211-66      PWR CHK NO SND    EA          5          4 A         1 -

211-77      ACFT SPARES STG   SF       6680       6568 S      3393 +       112 -
                                                  3505 I      6680 -

211-85      LINE MAINT SHLT   SF        960       2000 I      1040 +
                                                               960 -

214-20      AUTO VEH SHOP     SF      29020       3065 A     25955 -
                                                 25955 S

214-30      REFUEL VEH SHOP   SF       3060       2915 A       145 -       145 -

218-45      INSTRUMNT CAL/S   SF       7900       9634 A      1734 +      1734 +

218-50      BATTERY SHOP      SF       1110        704 S      1110 -       282 +

218-51      BAT RECHAR SHOP   SF       1520       1586 A        66 +        66 +

218-60      ACFT G/SPT SHOP   SF      12500      11307 I     12500 -

218-61      G/SPT EQ HLD SH   SF      19500        396 A     19104 -
                                                  4125 S
                                                  3781 I

219-10      PW SHOP           SF      29200      30759 A      3939 +      1559 +
                                                  2380 I

219-20      PAV/GRNDS EQ SH   SF       1800       1800 S      1800 -

219-25      PW SHOP STOR      SF       2200       4276 A      2076 +


UIC..  N12345                     SUMMARY                          PAGE..4
```

FIGURE 9
FACILITIES REQUIREMENTS PLAN SUMMARY

```
FACSO RPT SYM/NO. 11016/R2002R01                                                   11 FEB 8
                ACTIVITY GENERAL INFORMATION

     ACTIVITY UIC............. N00620  NAS WHIDBEY ISLAND WA
     H/T CODE................. 0       HOST
     HOST UIC................. N00620  NAS WHIDBEY ISLAND WA
     PARENT UIC............... N00620  NAS WHIDBEY ISLAND WA
     MAJOR CLAIMANT........... F       PACFLT
     SUB-MAJOR CLAIMANT....... F0      AIRPAC
     EFD UIC.................. N62474  WESTDIV
     AREA-COORDINATOR......... 13      NBSEATTL
     AREA COMPLEX............. WC      WHIDBEY IS WA

                          SPECIAL AREAS

                      AD  OLF COUPEVILLE
                      AE  NAVWPNSYSTRAFAC BRDMAN
                      CA  KITSAP COUNTY ARPT
                      FA  LAKE HANCOCK
                      JA  SEALION ROCK
                      KA  ADMIRALTY BAY
                      OA  DECEPTION PASS PARK
                      PA  CASEY STATE PARK
                      SI  SMITH ISLAND

                      ALTERNATE HOST LOCATIONS
      UIC              NAME                         H/T CD      SUB-CLAIMANT

     N62146  NAVMARCORESCEN SPOKANE WA                0         8P RESRED22

                          SUPPORTED UNITS
      UIC              NAME                         H/T CD      SUB-CLAIMANT

     N65907  NAVOCEANCOMDET WHIDBEY ISLAND            4         L  OCEANAV
     N66058  NAMTRAGRUDET WHIDBEY IS                  3         MO CNTECHTR

                              TENANTS
      UIC              NAME                         H/T CD      SUB-CLAIMANT

     N00621  NARU OAK HARBOR WA                       1         8  CNAVRES
     N63355  BRCOMMSTOR NAS WHIDBEY IS WA             1         K4 NAVSUP
     N66097  NAVHOSP WHIDBEY ISLAND WA                1         I  BUMED

               ALTERNATELY HOSTED TENANTS/SUPPORTED UNITS
      UIC              NAME                         H/T CD      SUB-CLAIMANT

     N68095  NAVREGMEDCEN BREMERTON WA                0         I  BUMED
     N68443  NAVREGDENCEN BREMERTON WA                1         I  BUMED



        * IDENTIFIES DISESTABLISHED ACTIVITIES
     UIC...N00620                 GENERAL INFORMATION                 PAGE      1
```

Figure 10

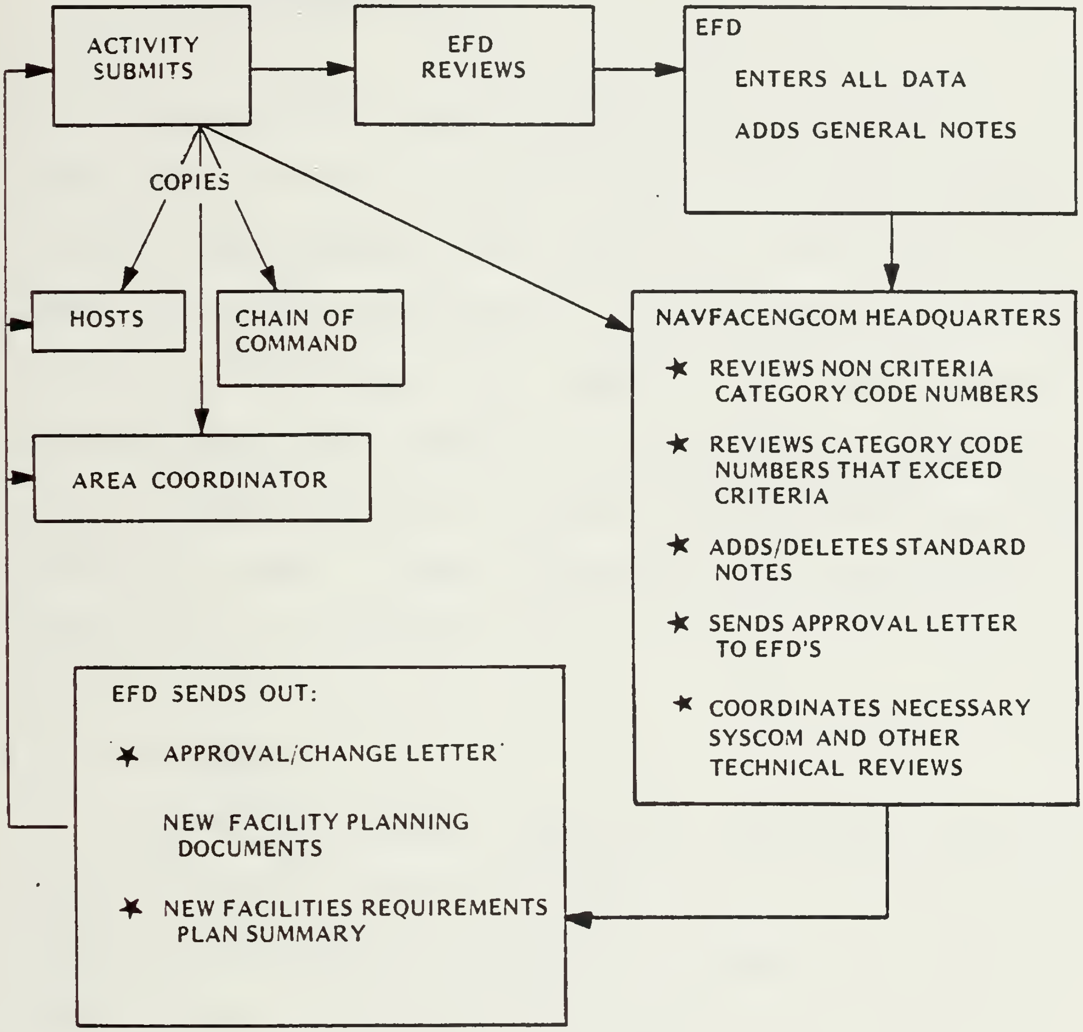

ACTIVITY SUBMITS
EFD REVIEWS
EFD
ENTERS ALL DATA
ADDS GENERAL NOTES
COPIES
HOSTS
CHAIN OF COMMAND
AREA COORDINATOR
NAVFACENGCOM HEADQUARTERS
★ REVIEWS NON CRITERIA CATEGORY CODE NUMBERS
★ REVIEWS CATEGORY CODE NUMBERS THAT EXCEED CRITERIA
★ ADDS/DELETES STANDARD NOTES
★ SENDS APPROVAL LETTER TO EFD'S
★ COORDINATES NECESSARY SYSCOM AND OTHER TECHNICAL REVIEWS
EFD SENDS OUT:
★ APPROVAL/CHANGE LETTER
NEW FACILITY PLANNING DOCUMENTS
★ NEW FACILITIES REQUIREMENTS PLAN SUMMARY

FIGURE 11
SUBMITTAL ROUTE
BASIC FACILITY REQUIREMENTS (CHANGES, ADDITIONS AND DELETIONS)

CHAPTER FIVE

CONSTRAINTS

5.1 Introduction

After reviews are conducted on the information in the Shore Facilities Planning System, the constraints, both natural and manmade, are analyzed. Some constraints have been previously documented in studies such as the Base Exterior Architecture Plan (BEAP), Air Installations Compatible Use Zones (AICUZ), Airfield Safety Clearances, Explosive Safety Quantity Distance (ESQD) and Electromagnetic Radiation (EMR). Other constraints are determined by the developer of the master plan.

5.2 BEAP

One of the major elements in the development of an activity master plan is the Base Exterior Architecture Plan (BEAP). The primary purpose of a BEAP is to identify how the physical environment of a base can be improved. Many bases have been built according to whatever changing military requirements have occurred at the time of construction. As a result the development patterns for a base have not considered the overall base organization.

Until recently the emphasis on base exterior appearance was virtually nonexistent. It is now recognized that

providing a quality exterior environment can improve overall image, morale, performance, retention of personnel, and make inroads on absenteeism. Providing such an environment requires a long term approach that addresses basic relationships beween functions and sites. A BEAP study for an activity consists of a program that must be updated and improved to remain effective. All the plans involved in a BEAP are considered guidelines and should be used to ensure that any projects that are developed will be compatible with long range plans.

Some of the overall observations made by an activity BEAP include the need to have good coordination and collaboration between planners, engineers, and architects to address visual problems at the design and review stage. Scheduling and funding should be realistically allocated to project design stages to ensure proper initial planning. Projects that deal with solutions instead of short term cosmetics should be heavily emphasized and large scale projects should be closely coordinated. Consideration should be given to assigning a prime consultant to provide overall coordination for those projects. Open space should be utilized as buffers and be considered as important as building sites.

As with other technical documents supporting a base, the Engineering Field Division provides the lead in producing the BEAP. The study will either be produced in house

or by an Architect-Engineer firm. In either case, a scope of work is developed that outlines the sequence of tasks and procedures. In general the study will follow the outline of introduction, survey, analysis, visual environment theme, visual environment development plan, implementation plan and base design guidelines (4:1-5).

The introduction of the BEAP basically defines the purpose of the study. It describes how the study is to be used and who should use it. It also includes general background information concerning the base, such as location, history, the planning ideal (for example, the checkerboard pattern), major tenants, and the climate.

The second portion of the BEAP is the survey. The installation is studied visually during the day and the night to record both the positive and negative impressions. The survey is done on three different levels; overview, functional districts, and site components. The overview is conducted from off station and on station vantage points. The idea is to perceive the base as first time visitors and permanent employees see it. The next level is to survey the major (functional district) land uses such as community facilities and housing to determine the problems associated with that district and its transition areas. Some problems that may be perceived include buildings that are not related to the site, no consistent signage, and no constant planting systems. The third level of the survey, site com-

ponents, identifies those components which are common to the exterior environment of the entire base. Each component, such as roads, parking, and utilities, are analyzed separately to determine which components detract from or enhance the continuity of the base.

After the survey is conducted, an analysis is performed to determine the major problems related to the districts and site components. A matrix (Figure 12) may be prepared to highlight these problems and compare them to how often they are perceived and who perceives them (4:2-92).

Using the "discoveries" made during the survey and analysis, a visual environment theme is developed to be the unifying element for any development. Many factors are considered on both the positive and negative side to determine a prevailing concept. For example, the visual environment theme for the 1983 Base Exterior Architecture Plan for Naval Air Station, Jacksonville, is "The Navy cares for its people" (4:3-2). The theme projects an image of an efficient, pleasant atmosphere for the base personnel and provides a guideline for systems design (design of various site components). The application of the theme applies to effective vehicular circulation, well designed signage, energy saving alternatives such as bicycle paths, as well as other opportunities for visual base improvements.

Building on the visual environment theme, a visual environment development plan is established by determining several alternative design concepts. The concepts are used to reinforce the theme and may include such ideas as minimized landscape with emphasized circulation or emphasized landscaped buffers to define land uses. Each concept is rated on its advantages and disadvantages with one concept recommended for use in the base development. The recommended concept should take into account the past development of the base and any land use recommendations made by previous master plans.

The concept determined during the development plan stage is utilized along with the survey to produce plans and projects with a set of funding priorities. The projects and their cost estimates are listed in the implementation plan. The priorities are set according to the impact the project will have on improving the environment and the function of the base. The projects and costs are based upon general guidelines that cover all major site components such as buildings, roads, parking, planting, signage and lighting. A checklist (Appendix C) may be used to ensure that the guidelines are followed in future projects (4:7-1).

5.3 AICUZ

Other essential studies in the development of a master plan are encroachment studies. In most cases major encroachment problems occur on U.S. Naval air stations due to the high population growth rates surrounding many of these bases. To plan for this problem, the Air Installations Compatible Use Zones (AICUZ) program was established in the 1970's. This program was recently expanded into the Land Use Compatibility (LUC) program. The LUC program is comprised of five elements: staff support, AICUZ program, technical studies, awareness and training, and institutionalization (23:14). As with the BEAP, the Engineering Field Division provides the technical staff support while the AICUZ program itself is still the main emphasis of the LUC program. The third element involves specific area studies that develop strategies for local commands. Both the AICUZ and technical studies are included in the activity master plan. The fourth and fifth elements involve the use of training programs and seminars to educate key officials and promote liasion with other agencies and the surrounding community. In some cases staff are assigned to monitor off-base developments that may produce encroachment problems.

The AICUZ program was developed to ensure compatibility between military air installations and the neighboring community, to maintain air operational capability and to protect the safety of the public (23:18). The pro-

gram utilizes land use planning techniques to decrease the effect of aircraft noise and reduce the potential for accidents both in flight and on the ground. The concept involves a systematic method to quantify and map aircraft noise, accident potential zones and existing or potentially incompatible land uses.

The AICUZ program is implemented in four basic steps (23:20). The first step is to develop studies that result in a program of noise reduction, emphasizing compatible land use. The second step involves the implementation of a timed phased program of coordination with other agencies and local officials. For those areas where land use compatibility is impractical or has failed, the third step provides identification and programming of projects to acquire property and abate noise. Upon implementation of the program, periodic reviews, step four, are conducted to ensure compatibility.

To establish compatible land use, the first requirement is to define and map the noise environment. The noise environment is measured by using average sound levels over 24 hours and noise levels from the various aircraft types. The data is combined into a single measure for each location and then are developed into noise zone contours. The noise zones are rated from one (least impact) to three (most severe). The end result is a noise footprint for the base. Figure 13 (23:35) outlines the data requirements for

use in "NOISEMAP", a computer program that generates noise zone contours.

The next step in establishing compatible land use is measuring aircraft accident potential. Most aircraft accidents occur during takeoff and approach making the air station and the surrounding area more vulnerable than other areas. The method used measures the cumulative percentage of accidents contained within specified areas, then defines the accident potential zones (APZ's) and the clear zones. These zones are determined by current aircraft type, flight conditions, operating parameters, history of aircraft accidents and applicable Department of Defense guidelines.

APZ's and clear zones for fixed wing aircraft differ from those of helicopters. In most cases helicopter zones are smaller and do not create land use problems. Fixed wing aircraft, on the other hand, create many of the compatibility problems due to long approach distance required. Figure 14 illustrates the typical APZ setup for those type of aircraft (23:42). The zones can be modified to suit local conditions.

Using the APZ's and noise footprints, a matrix of recommended compatible land uses is developed for the air station. The recommendations try to assure that the population concentrations are not exposed to noise pollution or possible aircraft accidents. Nine combinations of noise and accident potential are utilized with three basic categories

of land use acceptability; compatible, restricted and incompatible. Appendix D details the land use compatibility for noise pollution areas (23:45). A similar matrix is used for APZ's. Each matrix is compared to the information gathered at the location and the more stringent of the two is utilized for planning land use.

At this point an AICUZ plan for the activity is developed and submitted for review. The plan is also provided to local officials to assist in their planning efforts. If conflicts do occur, various operational modifications such as the construction of acoustical enclosures or flight path variations can be analyzed and recommended. Land use controls such as zoning and restrictive easements can by imposed. In some cases land that is impacted by AICUZ may be purchased.

5.4 Airfield Safety Clearances

Intertwined with AICUZ are other airfield safety clearances that must be considered in developing a master plan. These imaginary surfaces include approach/departure clearance surfaces, inner horizontal surfaces, conical surfaces, and outer horizontal surfaces. The size of the surfaces depends on the runway classification as determined by the AICUZ study. In addition, lateral clearances are established for airfield pavements. Figure 15 illustrates the

surfaces for a Class A runway (11:4422-5). All these surfaces must be taken into consideration when planning land use compatibility.

5.5 Hazardous Materials and Radiation

Hazardous materials are an important consideration in siting facilities. Hazardous substances include ordnance, flammable materials, poisonous materials, and corrosive materials. The substances are placed into one of four divisions depending on whether they can produce (1) mass detonation, (2) non mass detonation, but fragment production, (3) mass fire, or (4) moderate fire and no blast (11:4421-1).

The idea behind classifying the materials is to prevent an unsafe environment. Personnel are protected by methods that will either prevent an explosion, protect them if there is an explosion, or reduce the probabilities of an explosion or fire. Various aspects of operations that involve these materials such as transportation, handling, and storage are reviewed and subjected to stringent controls.

One of the ways personnel are protected is the establishment of explosive safety quantity distance (ESQD) arcs. For the different classes of materials and hazard divisions, facilities are required to be certain distances from the materials to protect them from a possible explo-

sion. Imaginary arcs are drawn at the maximum distance inside which facilities are to be uninhabited or exemptions made.

With regard to master plans, data is collected to verify the existing ESQD arcs. The ordnance types, storage capacities, transportation routes, and handling operations are reviewed. The use of facilities, whether they are storage or operational, is also determined along with what is required by the activity in terms of storage, handling and transport. At that point options are analyzed to determine if ordnance or non-compatible facilities can be relocated, storage facilities can be downloaded, or if the status quo will be maintained. The revised ESQD arcs are then used to define land use.

Electromagnetic radiation (EMR) hazards provide the same sort of problems as hazardous materials. Various types of facilities are required to be certain distances from the source of radiation or be exempted. For example, figure 16 lists the minimum isolation distances for radio receivers and transmitters (11:4421-2).

When collecting data for a master plan, the height of the antenna and the adjacent hazards such as ordnance, fuel and personnel must be considered. Other considerations include equipment type, power output, operating frequency, operating range, and beam width and pattern. As with the hazardous materials, options are reviewed to determine if a

hazard source can be eliminated or modified, non-compatible structures can be relocated, or status quo is maintained.

5.6 Other Constraints

There are many other constraints that are analyzed during the development of a master plan. Some of these constraints are manmade such as AICUZ and others are natural such as flood plains. Appendix E lists public laws, executive orders and other directives that may have relevance to the activity's master plan (11:4418-1).

5.6.1 Natural Constraints

During the master plan development process, the Architect-Engineer or in-house EFD team studies the natural (environmental) constraints at the activity. One of the major constraints affecting land use is flood plains. Flood plains are important land resources that consist of approximately five percent of the total U.S. land area (25:414). If the land that may be flooded from lakes and oceans is included, the percentage increases to six. In many areas flood plains are becoming more valuable as populations and the demand for land increases. If development on flood plains is allowed, major damage can result. Losses may include physical damage to property, interruption of social

and business activities, and possible injury to personnel. Other problems associated with flood plains include disaster relief, flood fighting, and increased security. As a result of these considerations, Executive Order 11988, Flood Plain Management, requires that flood plains be treated as uninhabitable land as much as possible (8:2). If the land must be used, then the project will require environmental documentation and be submitted for public review. Projects should be those that would suffer the least amount of damage from floods. They may include parking and recreational areas. The executive order also requires the identification of 100 and 500 year flood plains. Another order that affects the placement of facilities at an activity is Executive Order 11990, Protection of Wetlands, which requires the identification and preservation of wetlands (8:3).

Two laws that have major effects on master planning are the Endangered Species Act of 1973 and the Coastal Zone Management Act of 1972 (8:3). The Endangered Species Act requires the activity to identify and protect critical habitats of endangered plants and animals. It also requires the protection of any area that may have biological importance. The act specifies any project that will affect the habitats must have an environmental assessment and the U.S. Fish and Wildlife Service must be consulted. The Coastal Zone Management Act requires federal agencies to be consis-

tent with state coastal zone management programs. In the development of an activity's master plan, areas are identified that require coastal zone consistency.

There are many other environmental constraints that must be considered in master plan development. Climate, soil type, vegetation, topography, forestry plans, and surface drainage all affect proper land use planning. The concept behind the analysis of natural constraints is to determine human impact on the environment and the environment's impact on humans. The end result should be a determination of the environmentally constrained areas and the prime buildable land.

5.6.2 Manmade Constraints

There are many other manmade constraints besides those already discussed that are involved in the development of master plans. One of the first to be considered is the socioeconomic overview of the area. This covers the history of the base and the surrounding community, the political climate, population trends, and economic trends in employment, income, and revenue (11:4420-1). Local planning and zoning initiatives are analyzed to determine if any encroachment problems may occur. Community distribution systems such as transportation and utilities are also reviewed.

The base infrastructure (transportation and utilities) is analyzed to determine the existing capacity, expansion capacity, age, efficient or inefficient configuration, and their compatibility with the surrounding environment. Some of these questions will have been considered in the BEAP in regards to the activity's transportation facilities which include parking areas, rail lines, roads, pedestrain walkways, and gate locations. The analysis of the utilities include electrical systems, water, natural gas, sanitary, steam, alarm systems, hazardous wastes, and any other systems maintained by the activity.

Another area studied is facilities. Utilizing the facility planning documents, the use of the facilities, construction types and conditions are determined. The current land use is reviewed in regards to outgrants, easements, and leases with future projections of any changes. An important factor to be considered on many bases is whether there are any historical, architectural, or archaeological sites. Any constraints discovered are incorporated into the master plan.

○ POSITIVE
◒ NEUTRAL
● NEGATIVE

■ HIGH
◪ MODERATE
□ LOW

— NOT APPLICABLE

	Functional Districts & Encounter Areas	FUNCTIONAL DISTRICT EVALUATION CHART																		ENCOUNTER FREQUENCY CHART						
		NATURAL RESOURCES	RELATION TO ADJ. USE	ORGANIZATION/SITE PLAN	BUILDINGS/ARCH. STYLE	LIGHTING	PARKING	SIGNAGE	AUTO CIRCULATION	LANDSCAPING	VISUAL CHARACTER	IDENTITY	SITE FURNITURE	DAYTIME IMPACT	NIGHTTIME IMPACT	VIEW FROM U.S. 17	VIEW FROM I-295	VIEW FROM WATER		VISITORS/PATIENTS	CIVILIAN EMPLOYEES	MILITARY / OFF BASE	MILITARY/ON BASE	VIEWED FROM U.S. 17	VIEWED FROM I-295	VIEWED FROM WATER
	ADMINISTRATION & TRAINING	○	○	●	◒	◒	◒	●	●	◒	◒	●	●	◒	◒	—	—	—		◪	■	◪	■	—	—	—
	AIR OPERATIONS & NARF	◒	●	●	◒	●	●	●	●	●	◒	○	●	◒	○	—	◒	◒		◪	■	◪	■	◪	—	◪
	NAVAL REGIONAL & MEDICAL CENTER	○	○	◒	◒	◒	●	●	◒	◒	◒	◒	◒	◒	○	—	◒	—		■	◪	■	◪	◪	—	—
COMMUNITY FACILITIES	EXCHANGE/RETAIL	●	◒	●	◒	●	●	●	●	●	●	●	●	●	◒	—	—	—		◪	◪	■	■	—	—	—
	COMMUNITY SERVICES	◒	○	◒	◒	◒	◒	◒	◒	●	◒	◒	◒	◒	◒	—	—	—		◪	◪	◪	■	—	—	—
	RECREATIONAL CLUBS	○	○	◒	◒	◒	◒	●	◒	◒	○	○	◒	◒	○	—	—	◒		□	□	■	■	—	—	—
	MAIN GATE	◒	◒	●	◒	●	●	●	●	●	◒	●	●	●	◒	●	—	—		■	■	■	■	—	■	—
	YORKTOWN AVE	◒	◒	◒	—	◒	—	●	●	◒	◒	●	●	●	◒	◒	—	—		■	■	■	■	—	◪	—
	BIRMINGHAM AVE.	◒	◒	◒	—	◒	—	●	●	●	◒	●	●	●	◒	◒	—	—		◪	■	■	■	—	◪	—
	SECONDARY ROADS	◒	◒	◒	—	●	◒	●	●	◒	◒	◒	●	◒	◒	—	—	—		◪	◪	◪	■	—	—	—
	OPEN SPACES	○	◒	○	—	●	—	◒	—	○	○	○	◒	○	○	○	○	○		■	■	◪	■	■	■	◪
HOUSING	UEPH	●	●	●	●	●	●	●	●	●	●	●	●	●	◒	—	—	—		◪	◪	◪	■	—	—	—
	UOPH	○	○	◒	○	◒	○	○	○	○	○	○	◒	◒	○	—	◒	○		□	□	□	■	—	—	■
	MEQ	○	○	◒	◒	◒	◒	◒	○	◒	◒	◒	◒	◒	○	—	—	—		□	□	◪	■	—	—	—
	MOQ	○	○	○	○	○	○	○	○	○	○	○	◒	○	○	—	○	○		◪	□	◪	■	■	—	◪
	ARMED FORCES RESERVE CENTER	◒	◒	◒	◒	◒	◒	●	◒	●	◒	◒	◒	◒	◒	◒	—	—		■	■	■	■	—	■	—
	NAVAL SUPPLY CENTER	◒	○	◒	○	○	◒	◒	◒	◒	●	◒	—	◒	○	◒	—	—		◪	◪	◪	◪	—	■	—
	UTILITIES, MAINTENANCE & STORAGE	●	○	◒	◒	◒	◒	◒	◒	●	●	◒	—	◒	◒	—	◒	◒		—	—	—	◪	—	—	◪

Figure 12

NOISE CONTOUR DATA REQUIREMENTS

AIRFIELD OPERATIONS

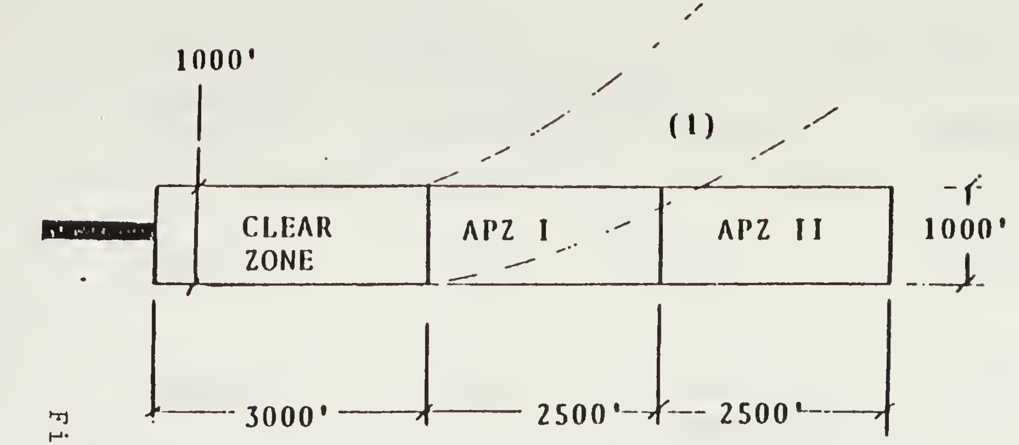
1. Operations
   - a. Annual (1-3 years)
   - b. Monthly (last year)
   - c. Daily (time of day)
2. Runways
   - a. Location
   - b. Length
   - c. Utilization
3. Runup Pads
   - a. Location
   - b. Orientation
   - c. Aircraft/Engine type
   - d. Number of runs
   - e. Duration
   - f. Time of day

AIRCRAFT

1. Types
2. Base loading
3. % of operations by typ
4. Mission profile
   - a. Departures
   - b. Arrivals
   - c. Touch and go
   - d. FCLP[2]
5. Flight tracks
   - a. Location
6. Altitude profiles
   - a. Altitude
   - b. Power setting
   - c. Airspeed

Figure 13

FIXED WING AIRCRAFT
ACCIDENT POTENTIAL ZONES

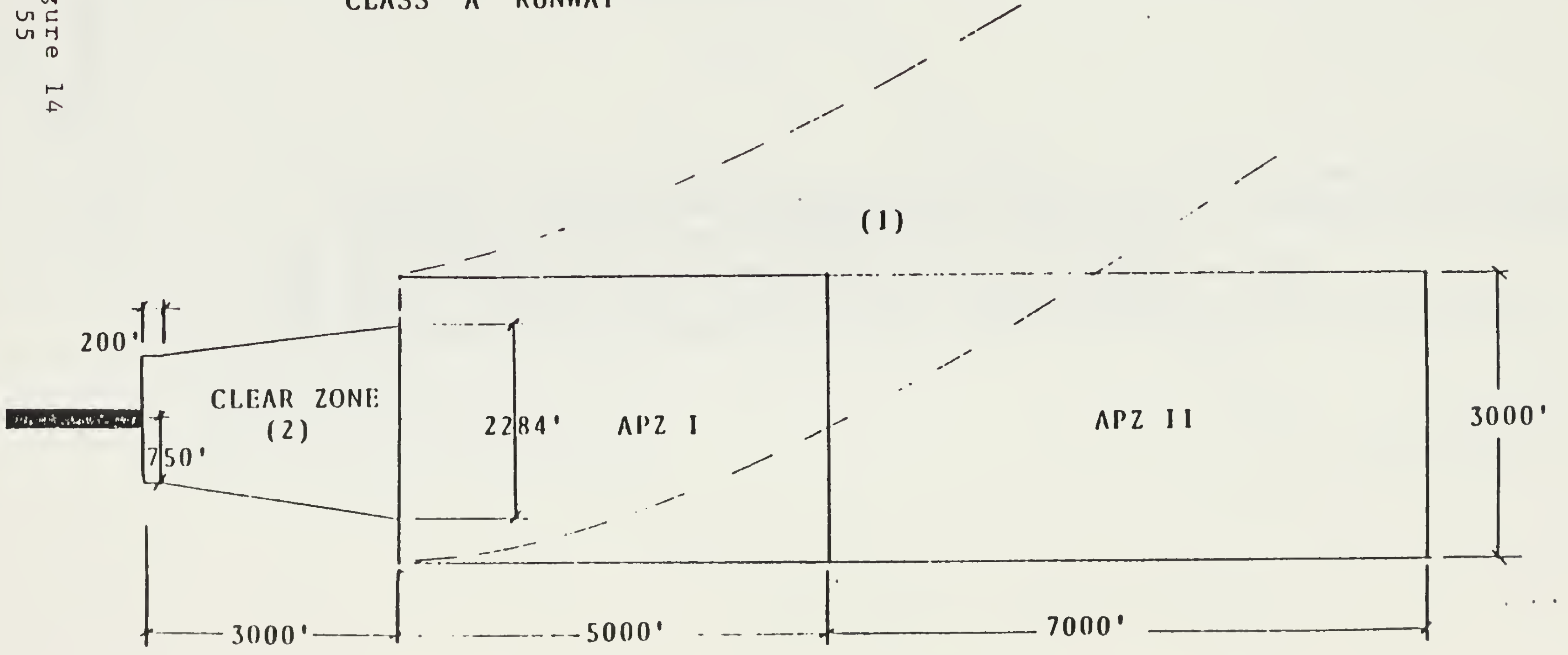


CLASS "A" RUNWAY

NOTES:

(1) APZ I and II may be altered to conform with flight shadow.

(2) The width is the same as the Navy standard 50:1 approach/departure fan. (See NAVFAC P-80.)



CLASS "B" RUNWAY

Figure 14

ACCIDENT POTENTIAL ZONES(1)(2)

(FIXED WING AIRCRAFT)

CLASS OF(3) RUNWAY	CLEAR ZONE		APZ-I		APZ-II	
	LENGTH (FT)	WIDTH (FT)	LENGTH (FT)	WIDTH (FT)	LENGTH (FT)	WIDTH (FT)
CLASS "A"	3000	(4)1000	2500	1000	2500	1000
CLASS "B"	3000	(5)Width of approach/departure fan	5000	3000	7000	3000

(1) Sizes shown are normal dimension. Their use shall be verified at each installation (either confirmed or justification for their modification provided in accordance with paragraph C.(3).

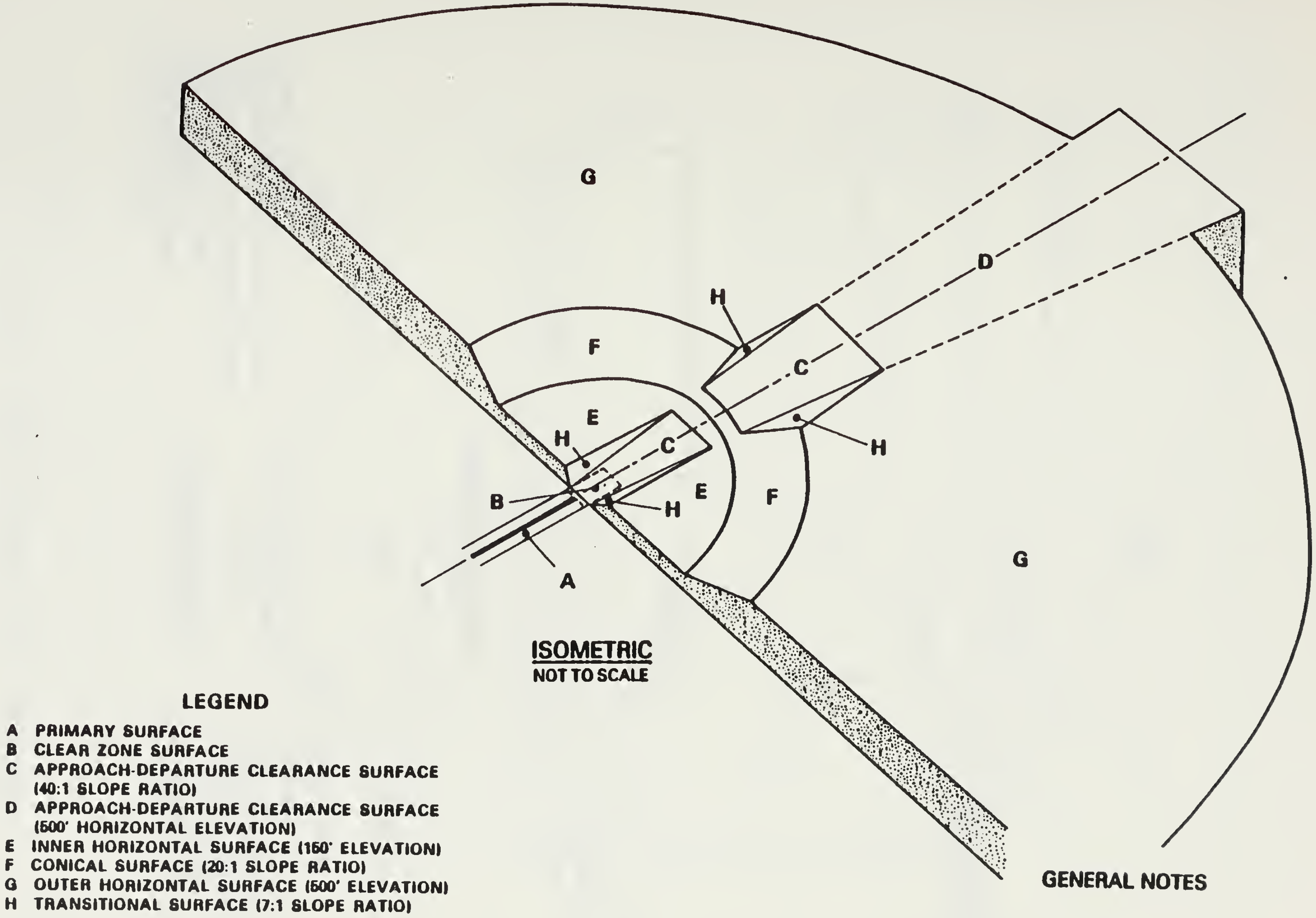
(2) See following page for sketch of fixed wing aircraft APZ's.

(3) See paragraph C.(1)(b) for definition of Class "A" and "B" runways.

(4) Class "A" runway is most likely to occur at basic training propeller aircraft OLF's.

(5) Fan referred to is standard Navy fan (see NAVFAC P-80)

Figure 14 (cont.)

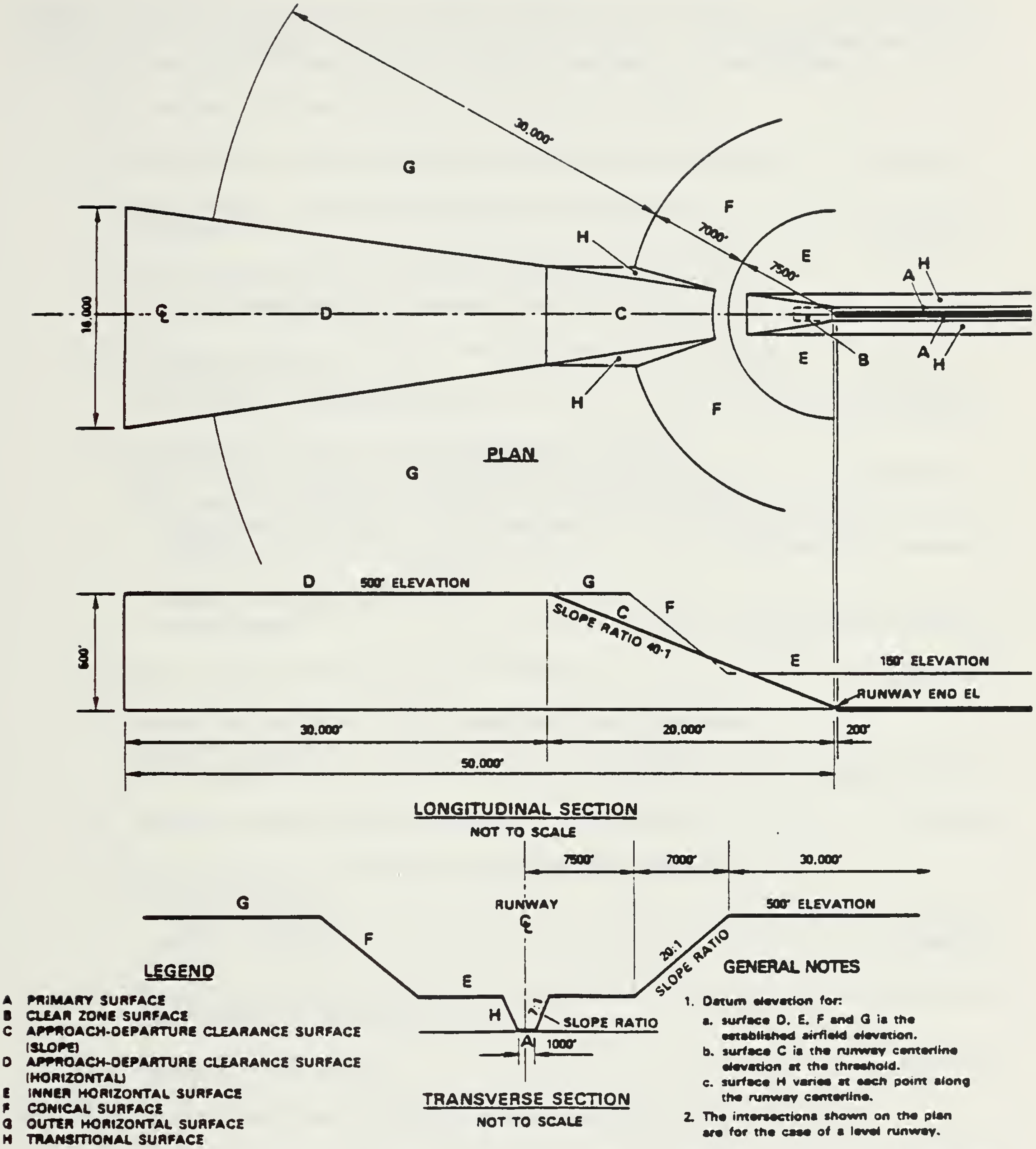


LEGEND

A PRIMARY SURFACE
B CLEAR ZONE SURFACE
C APPROACH-DEPARTURE CLEARANCE SURFACE (40:1 SLOPE RATIO)
D APPROACH-DEPARTURE CLEARANCE SURFACE (500' HORIZONTAL ELEVATION)
E INNER HORIZONTAL SURFACE (150' ELEVATION)
F CONICAL SURFACE (20:1 SLOPE RATIO)
G OUTER HORIZONTAL SURFACE (500' ELEVATION)
H TRANSITIONAL SURFACE (7:1 SLOPE RATIO)

CLASS A RUNWAY - AIRSPACE (ISOMETRIC)

Figure 15



LEGEND

A	PRIMARY SURFACE
B	CLEAR ZONE SURFACE
C	APPROACH-DEPARTURE CLEARANCE SURFACE (SLOPE)
D	APPROACH-DEPARTURE CLEARANCE SURFACE (HORIZONTAL)
E	INNER HORIZONTAL SURFACE
F	CONICAL SURFACE
G	OUTER HORIZONTAL SURFACE
H	TRANSITIONAL SURFACE

GENERAL NOTES

1. Datum elevation for:
   - a. surface D, E, F and G is the established airfield elevation.
   - b. surface C is the runway centerline elevation at the threshold.
   - c. surface H varies at each point along the runway centerline.
2. The intersections shown on the plan are for the case of a level runway.

CLASS A RUNWAY-AIRSPACE (PLAN & SECTIONS)

Figure 15 (cont.)

COMMUNICATIONS DISTANCE SEPARATIONS

Minimum isolation distances for radio receiver and transmitter sites have been established by the Naval Electronics Systems Command. The separation selected to limit mutual interference of electronics equipment is as follows:

(1) High, medium, and low-frequency receiver site from:

(a) High-power, very low frequency transmitter stations........25 miles

(b) High-power, low and high frequency transmitter stations..15 miles

(c) Other transmitter stations not under Navy control.
Field intensities also govern, see NAVELEX 0101,103..........5 miles

(d) Runways and glide paths. For aeronautical receiving
at air stations...1,500 feet
For general communications.................................5 miles

(e) Teletype and other electromechanical systems:
Low level operation or installed in shielded room.........No minimum
High level operation installed in unshielded room
  Large installation (communications
  center)..............................2 mi from nearest antenna

  Small installation (1 to 6
  instruments)..........................200 ft from nearest antenna

(f) Main highways (from nearest antenna).....................1,000 feet

(g) High-tension power lines (overhead) and receiving
station feeders. Lines over 100 KV require 2
mile separation........................1,000 ft from nearest antenna

(h) Habitable areas (beyond limits of restriction)...............1 mile

(i) Areas capable of industrialization (beyond limits
of restriction)
  Light Industry...3 miles
  Heavy Industry...5 miles

(j) Radar installation (depending upon type)..................Calculate
See NAVELEX 0101,103 Table 4-1

(k) Primary power plants..5 miles

(2) High, medium, and low frequency transmitter site from:

(a) Other transmitter stations not under Navy control...........3 miles

(b) Runways and glide paths for aeronautical
transmitting at air station...............................1,500 feet

(c) Main highways..1,000 feet

(d) High-tension power lines (overhead):
Transmitter station feeders...............................1,000 feet

Figure 16

(3) Remote VHF/UHF transmitter building from:

(a) Operations building and control tower....................1,000 feet

(b) VHF/UHF receiver building and housing area...............1,500 feet

(4) Remote VHF/UHF receiver building from:

(a) VHF/UHF transmitter site.................................1,500 feet

(b) Highways, industrial, and housing areas..................1,000 feet

(c) Radar installations......................................1,500 feet

(5) Wullenweber Facility:

(a) No obstruction should protrude above a three degree angle of elevation measured from the base of the high band antenna elements.

(b) Separation distances from possible sources of interference are similar as for other high, medium, and low frequency radio receiver sites. For specific guidance, see NAVELEX shore criteria Security Group Stations 0101,108.

Figure 16 (cont.)

CHAPTER SIX

CONCEPT DEVELOPMENT

6.1 Concept Development

Building on the planning models introduced earlier and the analysis of the constraints and requirements, the Navy uses planning synthesis and concept development to produce a final recommendation. The basic idea behind this planning ideal is that "complex planning requires an organized approach that synthesizes the relevant data and develops a logical concept" (11:4423-2). The planning process is broken into four aspects; requirements planning, capabilities planning, synthesis, and concept development (11:4423-2).

The requirements planning aspect utilizes the Shore Facilities Planning System to analyze what assets exist on the base versus what assets are required. The difference results in a list of proposed construction or demolition projects. The second aspect, capabilities planning, combines the natural and manmade constraints to determine the developmental potential of the site, in particular the prime buildable land.

Using the results from the requirements and capabilities planning phases, the synthesis process combines them into a developmental scheme. The process involves five

steps: analysis of activity functions, definition of functional relationships, preparation of the ideal model, adapting the ideal model to the site and developing the proposed land use (11:4423-2). The functional analysis determines the major functions of an activity which are utilized to develop the functional relationships. "Bubble diagrams" are produced that show which functions work together, support other functions, or which functions should be isolated. They also show relationships to off-base land uses and the transportation system. The "bubbles" are combined into an ideal model that includes all the functions of the activity, their relationship to each other and their proportional size. The ideal model is then adapted to the site in order to include the natural and manmade constraints. At this point the model considers existing facilities and provides for the correct land area for each land use.

During the last step of the synthesis process, the concept development phase analyzes the physical development of the facilities and the land. It considers facility size, service requirements, traffic flow, urban design, development phasing and demolition. The result of concept development is a determination of whether the proposed land use model is workable. If more than one concept is developed, they can be evaluated using economic analysis, matrix analysis and priority decisions. In the end the planning process should produce a workable land use program that is

realistic and can be developed within fiscal constraints. Using the developed program, the master plan is then pulled together and the results reviewed.

CHAPTER SEVEN

RESULTS OF A MASTER PLAN

7.1 Introduction

There are essentially four results of a master plan; the energy conservation plan, preliminary environmental assessment, proposed land use, and the capital improvements plan. The four results are intertwined with and support each other.

7.2 Proposed Land Use

The first result of the master plan is the proposed land and facility use. It features graphics that detail the entire base with all the tenant commands and the surrounding community. The graphics outline the siting of the proposed projects and the relationships that were developed during the concepts phase. All constraints are identified and any possibility for expansion under conditions of mobilization or mission change is discussed. The land and facilities are categorized in four ways; (1) fully used, (2) not being put to optimum use, (3) underutilized, and (4) not utilized based on current and/or projected use (8:2). Any management plans such as forestry and wildlife are summarized and design guidelines are prepared. The entire em-

phasis of this section is to give the planners an overall map for the siting of projects and provide long range planning for orderly development of the base.

7.2.1 Site Approvals

Using the proposed land and facility use plan, each major project submitted to the chain of command for approval and funding is required to have a site approval request attached. The site request must conform with the siting specified in the most current master plan. There are several reasons for the submittal of a site approval request. They include prevention of budget waste, protection of master plan integrity, quality control, land-use correctness and to ensure compliance with safety criteria (11:4450-1).

Most site requests are fairly simple and straightforward. They are documented using a map showing the site, a description of the project and the justification for the project. If airfield safety is involved, the elevation of the airfield, ground elevation, construction height, distance from the runway, and the runway elevation perpendicular to the site are required. For electromagnetic radiation involvement, antenna locations, antenna heights, equipment characteristics, operation frequencies, and other information should be included. The same rationale exists

for any projects that may involve ammunition and explosives safety. Information is included showing the ESQD arcs, the identification of any facilities within the arcs, and a description of the explosives in the project. Approval of these projects is based upon the examination of the project by the'DDExplosives Safety Board. In most other cases, the EFD is the approving agent for the site approval requests.

7.3 Energy Conservation Plan

Since the early 1970's energy conservation has received a great deal of attention within the defense community. Due to an executive order issued during the Carter administration, goals for energy use reduction were established for all activities. As a result, master plans are required to have energy conservation plans (ECP's). These plans demonstrate the use of base-wide energy systems concepts.

Because energy conservation is one of the objectives of a master plan, specific steps have been developed to incorporate energy reduction concepts. Figure 17 illustrates these steps (11:4420-3). Each activity has an established baseline of energy consumption that all goals and current use are compared against. The trends are analyzed to identify any possible problems. If problems exist, the utility systems and facilities are scrutinized to determine

solutions. These could be modifications to the utility systems, changes in traffic circulation or changes in land use. The solutions are outlined in the master plan.

For example, an ECP was developed for the Yokosuka Naval Base (11:4420-3). The base is the principal port for the Seventh Fleet in the Naval Force Japan area. Any combat ship including aircraft carriers can be accommodated in the berths and drydocks. Many of the facilities were constructed during World War II and approximately 5,000 personnel are employed on the base.

In developing the ECP, the forms of energy consumed (electricity, diesel fuel, and gasoline) were studied to determine how they were transported and who were the major users. Building on this data, the current energy conservation study and the energy engineering program studies were analyzed. The energy conservation study was conducted to identify and develop energy conservation projects and to assist the base in meeting its goals. The energy engineering program included studies on cogeneration, energy monitoring and control systems, and heating power plant optimization. These studies and the data produced several energy conservation investment program (military construction scope) and energy technology applications program (less than military construction scope) projects. These projects were listed in the energy conservation plan along with the land use planning, facility siting, and infra-

structure development recommendations that impacted energy use. The long range impacts included replacement of old facilities with new energy-efficient buildings and the development of cogeneration. The plan was then incorporated into the Yokosuka Naval Base Master Plan.

7.4 Preliminary Environmental Assessment

Another result of the master plan is the environmental documentation. In 1969 the National Environmental Policy Act (NEPA) was enacted to provide guidance on comprehensive enviromental policy for both the public and private sectors. The NEPA requires "a systemic, interdisciplinary approach which will insure the integrated use of natural and social sciences and environmental design arts in planning and decision making which may have an impact on man's environment" (8:2).

To ensure NEPA compliance, Navy directives have integrated environmental planning with master plan development. The environmental impact of the plan is assessed using the same logic established for environmental impact statements. This is conducted through the use of preliminary environmental assessments.

The purpose of the preliminary environmental assessment (PEA) is to "alert" the activity and its chain of command to potential environmental problems and the possible

need for further documentation (8:2). The PEA should be complete enough to allow planners to make objective decisions concerning environmental impacts. Input to the PEA should be obtained from the existing conditions analysis. The PEA must be consistent in format and content to insure adequate assessment and review. As a result originators of PEA's are required to follow a specific outline. The impacts analyzed by the PEA are only for those projects recommended by the master plan.

The PEA consists of seven distinct parts (8:2). The cover sheet provides general information such as the title and point of contact. The summary and introduction outline the major findings of the PEA, the objectives of the master plan, and the recommendations. The fourth section presents a description of the existing environmental conditions. The basic idea is to present the interrelationships and cumulative impacts of the master plan. Some areas of special interest are the presence of endangered species, cultural resources, or any limiting quality of soil, geology, or topography.

The remaining sections of the PEA evaluate the projects listed in the capital improvements plan. Each project is evaluated for its potential environmental impact, especially in relation to federal regulations such as the Clean Water Act, Coastal Zone Management Act and Archaeological Resources Protection Act. If any significant adverse en-

vironmental impact is determined after analysis of the projects, the PEA requires an outline and a cost/benefit analysis of the steps necessary to mitigate the impact. This last section promotes an early planning emphasis to lessen any environmental damage that may occur.

Appendix F contains a typical PEA used by the Southern Division of the Naval Facilities Engineering Command.

7.5 Capital Improvements Plan

Perhaps the most important result of an activity master plan is the capital improvements plan or CIP. The CIP is "a formalized program for implementing the recommendations of the Master Plan" (20). The CIP establishes priorities and construction/demolition phasing for the projects that were identified during the development of the master plan. It provides the main background documentation for these projects so detailed planning and site approvals can take place. Each project is analyzed to ensure that it is in compliance with the proposed land use.

The CIP essentially consists of an independent document that has three sections; planning objectives, project identification, and project descriptions (8:2). The planning objectives basically contain a brief statement covering the objectives of the master plan and identify specific projects that support each objective.

The project identification section gives a brief description of the project, assigns a project number, proposes a program year for accomplishment, estimates the cost, and anticipates the funding type. A site development plan of the entire activity will be included that indicates the location of the projects. Information on the buildings, utilities, transportation and landscape improvements are on the plan.

The third section, project descriptions, covers only those projects that are considered critical to the activity. These projects are positive candidates for funding within the six year time span of the master plan. Various aspects of the project are outlined beginning with the project title, project scope, and requirements which include an analysis of why the project is needed and the impact if the project is not provided. The siting considerations such as airfield safety clearances and environmental criteria are addressed along with any special permits to be obtained, required utilities and other requirements. Each constraint and requirement is fully described and documented.

Each project is shown on a site development plan detailing the adjacent facilities and land use constraints. The plan also shows the facility orientation, parking, landscaping, drainage and any other appropriate items. The design considerations for the project are outlined to pro-

vide the project designers with a "starting point." The information includes architectural design, safety requirements, interior space arrangements and any other urban design requirements. The last item addressed is the phasing of the project including any infrastructure changes that must take place.

The CIP is updated when the master plan is updated as a minimum. If it is determined by the activity and its major claimant that revisions are necessary due to changing priorities, the CIP will be updated without revision of the master plan. The CIP is then approved by the Chief of Naval Operations.

7.5.1 Pre-Design Programming

As an extension of the CIP, pre-design programming is the beginning of a successful facility design. Pre-design programming is "a comprehensive organized approach to facility design which involves an in-depth understanding of activity requirements, written down in such a way that both designer and activity understand" (8:2). The programming involves the collection of information and requirements that the construction of the facility must meet. It should be performed before the project documentation is completed. Funding is the activity's responsibility and the EFD is

available for assistance in conducting the pre-design programming.

7.5.2 CIP Projects

In general, projects are analyzed and the items of work are classified into one of four areas; maintenance, repair, construction and equipment installation. The cost of the classification area is compared against the funding limits outlined in Figure 18 (11:1243-2) to determine who approves the project and what appropriation is appropriate. From that point, it is placed into a program for funding.

For example, if a project is determined to be construction and under $25,000, it would fall under the commanding officer's authority to approve and fund. If the cost is between $25,000 and $200,000, the major claimant would have the responsibility for funding. Those projects submitted to the major claimant make up the special projects program. Any construction project over $200,000 falls within the military construction program. Military construction projects require approval by the U.S. Congress and are involved in the POM process which will be discussed shortly.

The focus of the CIP is primarily on the military construction projects and major special projects. Documentation is prepared for each project and submitted to the

chain of command for inclusion in the appropriate program. The special projects program is straightforward and funding, if available, can be obtained within two years. The military construction program, on the other hand, is fairly complex and requires at least four years from documentation preparation to construction start.

7.5.3 Military Construction Programming

The MCON (Military Construction, Navy) program consists of three components (11:4592-1). New missions or hardware such as the Trident submarine require new installations for support. Major directed initiatives which are approved by the Office of the Secretary of Defense or the Chief of Naval Operations usually require either the modernization of existing facilities or the construction of new facilities. Energy conservation and pollution abatement are examples of major directed initiatives. The third component is the correction of existing deficiencies. These MCON projects provide resources to replace aging, obsolete structures and the rehabilitation of substandard facilities.

Documentation for a military construction project is prepared by the activity using a DD form 1391. An example is given in Figure 19 (11:4592-1). The documentation is

then submitted to the chain of comand for review and approval.

After the planning process is complete and the projects for MCON approval have been documented and reviewed, they are placed in the Military Construction Requirements List, a data base system used in the Navy Programming System or the POM process as it is called. The POM process basically provides for the evaluation of competing requirements to determine the resources that will be devoted to the construction program. It then evaluates the construction projects to determine which will be accomplished in a given year.

The POM process begins when the Office of the Secretary of Defense provides annual guidance and the proposed resources for the next five years. The resources are split between the defense agencies depending on their role in the national strategy. The Chief of Naval Operations (CNO) then distributes the Navy's resources to the CNO resource sponsors who are the Deputy Chiefs of Naval Operations (DCNO's) and the Directors of Major Staff Offices (DMSO's). The sponsors such as surface warfare, air warfare, submarine warfare, and intelligence are oriented to the major mission requirements of the Navy.

The resource sponsor compares the resources to the requirements of the mission and develops the Sponsor Program Proposal (SPP). The package consists of the distri-

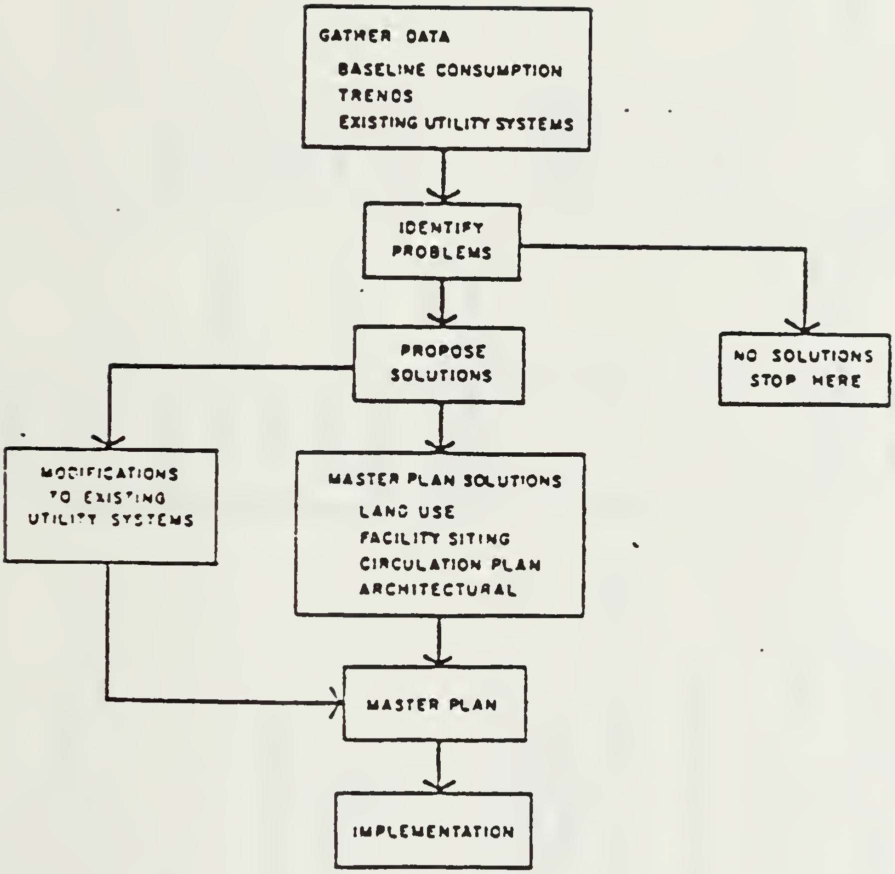
bution of resources among the competing programs including adequate funding for any military construction projects. At this point, CNO OP-44 serves as the assessment sponsor and recommends to each resource sponsor the appropriate resource level for the sponsor's military construction requirements. The recommendations are based on a baseline assessment which covers all recommendations made to the sponsor on the funding of projects, not just MCON. The recommendations are also based on results of the Shore Facilities Programming Board. The Board is attended by the resource sponsors, major claimants who work for the resource sponsors, and chaired by OP-44. It convenes in the fall at the beginning of the POM process. The board provides the major claimants the opportunity to advise their sponsors of their facilities requirements for the upcoming POM.

When the MCON projects are documented, the Naval Facilities Engineering Command assembles the budget request which is submitted in July to the Navy Comptroller for review and approval. The budget request is then reviewed jointly by the Office of the Secretary of Defense and the Office of Management and Budget. Their decisions are handed down as Program Budget Decisions in November and December. After the changes are incorporated, the MCON program is submitted to Congress in January.

Congress provides MCON authorization through the House and Senate Armed Services Committees and appropriations

from the Appropriations Committees. The execution of the program begins on 1 October (theoretically) upon passage of the Military Construction Authorization and Appropriation Act. The program execution is the responsibility of NAVFAC-ENGCOM which delegates authority and responsibility to its field offices.

Figures 20 and 21 (11:4592-1) detail the MCON documents flow and provide an example of the POM process as it relates to the fiscal year 1986 military construction program. As can be seen, the entire process will take four years if a project is accepted on the first submission.



METHODOLOGY FLOW CHART

Figure 17

PROGRAM	CATEGORY OF WORK	FUND RANGE	PROJECT APPROVAL	APPROPRIATION
ANNUAL MAINTENANCE & OPERATION	MAINTENANCE	UNLIMITED	COMMANDING OFFICER	O&MN (LOCAL)
	REPAIRS	< $75,000		
	CONSTRUCTION	< $25,000		
	EQUIPMENT INSTALLATION *	< $15,000		
SPECIAL PROJECTS	MAINTENANCE **	> $75,000	SPONSOR	O&MN (MAJOR CLAIMANT)
	REPAIRS	$75,000 - 500,000	SPONSOR	O&MN (MAJOR CLAIMANT)
	EQUIPMENT INSTALLATION *	> $15,000	SPONSOR	O&MN (SPONSOR)
	MINOR CONSTRUCTION	$25,000 - 200,000	SPONSOR	O&MN (MAJOR CLAIMANT)
	REPAIRS	> $500,000 > $100,000 & 50% of replacement value	ASN (S+L)	O&MN
UNFUNDED MILITARY CONSTRUCTION	EMERGENCY CONSTRUCTION (TOA $30 Million)	> $ 1 Million	ASN (S+L) & CONGRESS	MCN
	RESTORATION OF DAMAGED FACILITIES	> $ 1 Million	ASN (S+L) & CONGRESS	MCN
	CONTINGENCY CONSTRUCTION	> $ 1 Million	DASD (I+H) & CONGRESS	MCN
FUNDED MILITARY CONSTRUCTION	UNSPECIFIED MINOR CONSTRUCTION (UMC)	$200,000 - 500,000 $500,000 - 1 Million	CNO ASN (S+L) & CONGRESS	MCN (UMC)
	MINOR MILITARY CONSTRUCTION	$200,000 - 1 Million	CONGRESS	MCN (VARLOCS)
	PLANNING AND DESIGN	> $300,000	ASN (S+L) & CONGRESS	
	MILITARY CONSTRUCTION PROJECTS	> $ 1 Million	CONGRESS	MCN
	REAL PROPERTY ACQUISITION	> $100,000	CONGRESS	MCN

* Installation/expense costs only; does not include procurement of equipment.

** Applies to SPECIFIC maintenance, no limit on continuous maintenance.

Figure 18

1. COMPONENT NAVY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 14 APR 1983

3. INSTALLATION AND LOCATION NAVAL COASTAL SYSTEMS CENTER, PANAMA CITY, FLORIDA	4. PROJECT TITLE UNDERWATER WEAPON SYSTEMS LABORATORY

5. PROGRAM ELEMENT 6 58 96 N	6. CATEGORY CODE 315.20	7. PROJECT NUMBER P-253	8. PROJECT COST ($000) 5,400

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT COST	COST ($000)
UNDERWATER WEAPON SYSTEMS LABORATORY	SF	11,680	-	3,740
SYSTEMS TEST & CONTROL LABORATORY.	SF	7,970	120.00	(960)
MAGNETIC SIGNATURE GENERATOR BUILDING. . .	SF	710	451.00	(320)
MAGNETIC ENVIRONMENT FACILITY.	SF	3,000	157.00	(470)
NON-MAGNETIC TEST POOL	LS	-	-	(390)
BUILT-IN EQUIPMENT	LS	-	-	(1,600)
SUPPORTING FACILITIES.	-	-	-	1,130
SPECIAL CONSTRUCTION FEATURES.	LS	-	-	(280)
UTILITIES.	LS	-	-	(360)
PAVING & SITE IMPROVEMENT, DEMOLITION. . .	LS	-	-	(490)
SUBTOTAL	-	-	-	4,870
CONTINGENCY (5%)	-	-	-	240
TOTAL CONTRACT COST.	-	-	-	5,110
SUPERVISION, INSPECTION & OVERHEAD (5.5%). .	-	-	-	280
TOTAL REQUEST.	-	-	-	5,390
TOTAL REQUEST (ROUNDED).	-	-	-	5,400
EQUIPMENT PROVIDED FROM OTHER APPROPRIATIONS	-	-	(NON-ADD)	(0)

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Three one-story masonry buildings with brick facing, concrete foundations and floors, built-up and wood roofs, some non-magnetic construction with laminated wood framing, raised flooring, shielding, compressed air system, fire protection system, mechanical ventilation and air conditioning, environmental controls, utilities; elliptical test pool, waterproofed concrete liner, remote circulation system; demolition of three buildings.

11. REQUIREMENT: 11,680 SF. ADEQUATE: 0 SF. SUBSTANDARD: 2,310 SF.

PROJECT: Provides facilities for testing and analyzing mine and torpedo countermeasures.

REQUIREMENT: Adequate facilities for testing and evaluating Navy countermeasures against mine warfare. The mines of the near future are weapons which react to the simultaneous presence of several signatures from a single target (magnetic, pressure, seismic, acoustic). In addition, computer technology has greatly enhanced target discrimination capability and countermeasure resistance. This presents a serious threat to naval security. To meet this threat, funds have been committed to procure two new classes of mine warfare vessels and a new model of mine countermeasures helicopter. This facility will provide the means to analyze such mines to allow appropriate sweep and countermeasure tactics to be developed and tested, thus enhancing the effectiveness of these new ships and helicopters.

(Continued on DD 1391c)

Figure 19

MCON DOCUMENTS FLOW

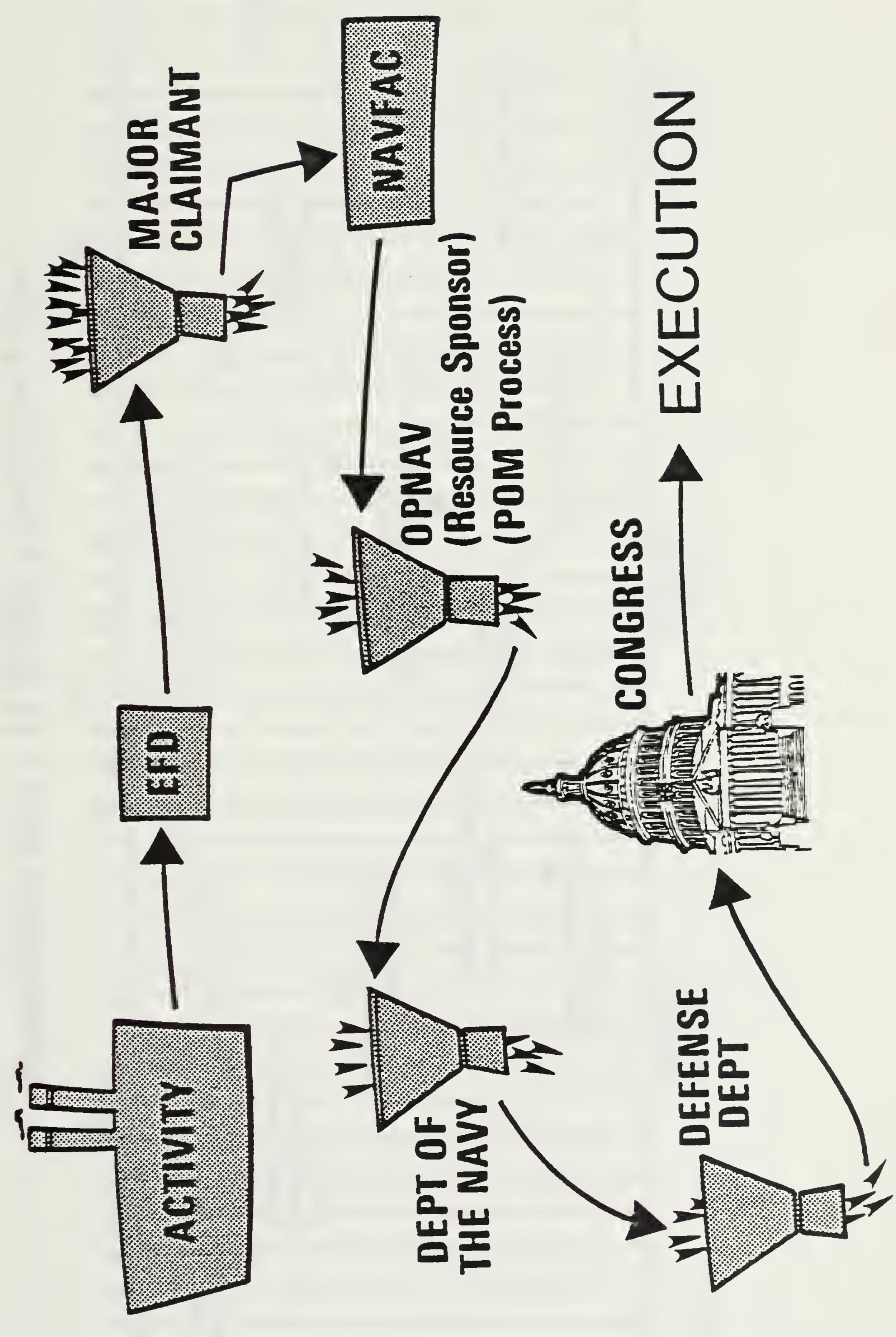
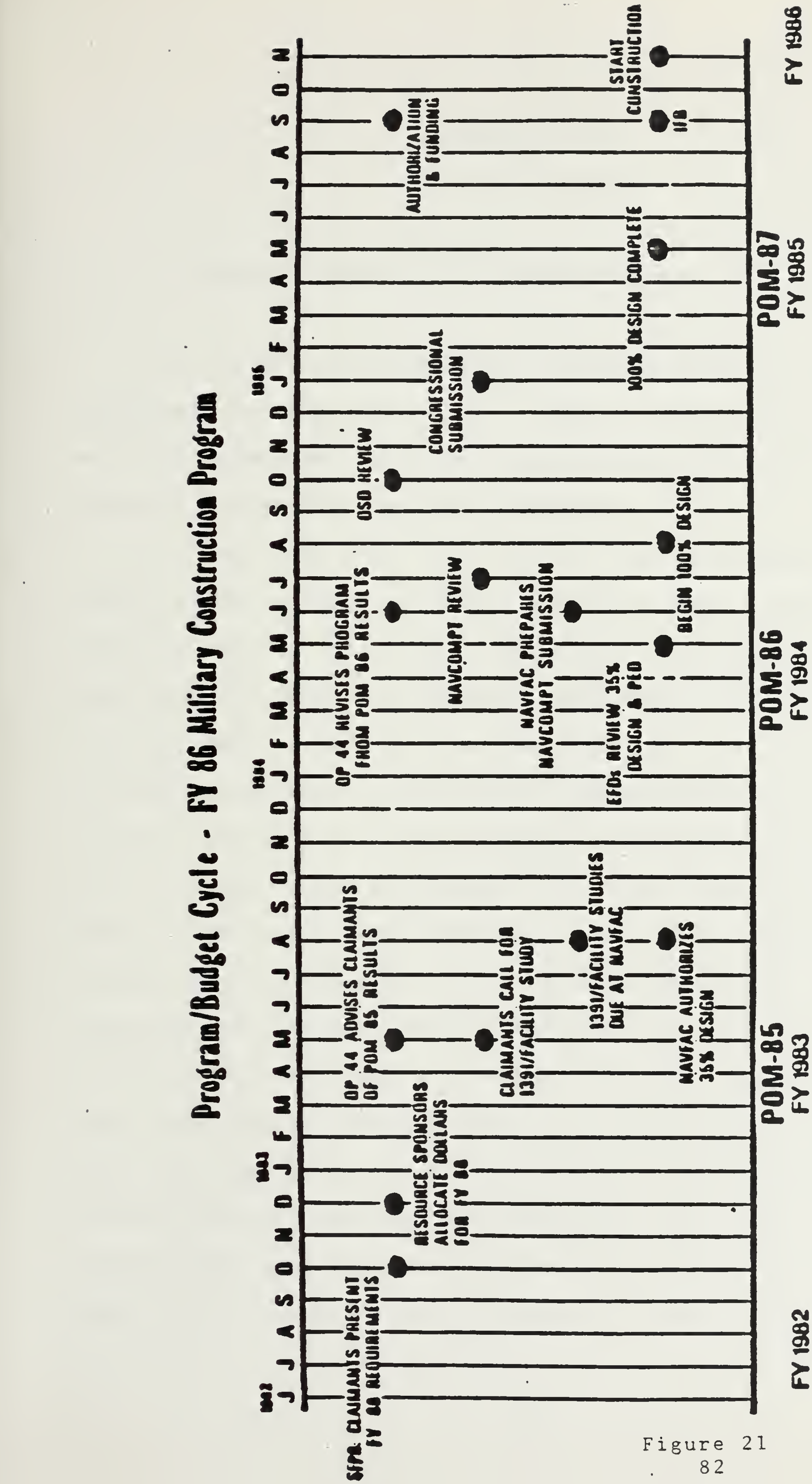


Figure 20



Program/Budget Cycle - FY 86 Military Construction Program

Figure 21

CHAPTER EIGHT

MASTER PLAN CASES

8.1 Bolling Anacostia Air Base Complex

Bolling Air Force Base and Anacostia Naval Air Station are colocated in Washington, D.C. Their history from the 1960's provides a good sense of what needs to be considered in master planning in terms of the base location.

In 1960, the Navy and the Air Force developed separate master plans for the two bases. The plans were presented to the National Capital Planning Commission, the Commission of Fine Arts, and the Senate Armed Services Committee. The plans were rejected and the Senate Armed Services Committee directed joint military planning for facilities in the Washington area. Acting on this, the Office of the Secretary of Defense created a study group consisting of personnel from the Army, Navy, and Air Force. The study group prepared the "Cantonment Study" in 1961 and advised the Senate on its recommendations to provide two troop housing centers for the Washington area. One center was to be at Fort Myers and the other at the Bolling-Anacostia complex. Both centers would provide joint use facilities with Fort Myers serving personnel at the Pentagon and Bolling-Anacostia serving its own area and the Washington Navy Yard. Design responsibility was assigned to the Chesapeake Division of the Naval Facilities Engineering Command in 1964. The EFD then con-

tracted with an Architect-Engineer firm to produce the master plan.

The emphasis of the master plan was to create a living area with two 1,500 person enlisted barracks, 300 enlisted family housing units, a 3,000 person galley, 550 person bachelor officer quarters, an exchange, commissary and several recreational facilities such as a bowling alley and a gymnasium. The goals involved in the design included ample parking, good landscaping, and no vehicle traffic in the living area (15:356).

Given this general outline of what was required, the planners surveyed the area and identified several constraints that needed to be addressed in the master plan. The major consideration was the location of the complex. When the Washington area is viewed from the south and the Potomac River, the facilities at Bolling-Anacostia feature predominantly in the landscape. As a result the new facilities were required to blend with the overall "picture" of historic sites and government monuments.

Other considerations included potential flooding from the Potomac River and the close proximity of the Washington National Airport. The flooding potential was solved by increasing the floor elevations of the new facilities. Noise levels and accident potentials from the airport were studied and impacted on the location and size of the structures. Soil conditions were also studied to determine their effect on the building locations.

The Bolling-Anacostia complex is located on or near a historic Native American village which was taken into account in siting the facilities. Another design guideline provided that the parking lots would be screened with shrubbery.

The basic idea behind the master plan was to create a base that satisfied all the requirements, was functional, within funding guidelines, and pleasing to the eye.

9.2 The Naval Academy

In 1966 the Naval Academy began an eight year construction program to rehabilitate old facilities, replace utility systems, and construct new academic buildings (12:253). The program was based on the expansion in the curriculum from 50 courses in 1959 to 300 in 1968. The facilities at the time of the expansion were built beginning in 1905 and were considered structurally sound, but in need of major overhaul to accommodate the increased workload and the development of new teaching methods. The basis for the construction program was the master plan provided by the Naval Facilities Engineering Command in 1964.

As with any master plan, the planners were faced with many constraints in developing the ideal Academy. One was the location of the Academy on reclaimed land from the Severn River. This constraint led the planners away from land acquisition to land redevelopment. Nonessential functions were removed from the academic area and land utilization was increased.

Construction included the largest academic facility ever built at the Academy as well as the rehabilitation of several existing academic buildings. The rehabilitation provided for the rearrangement of interior spaces to increase utilization and new utility services. A major consideration for the planners was the phasing of construction to create as little disruption as possible.

During the construction program, additional facilities were planned to accommodate the expansion. They included a new library and engineering building. Easy accessibility of the library to the students and the facility was a key factor in its siting. The planners also provided for future expansion.

Other constraints that were considered in the master plan development included architectural styles, flexibility in space re-allocation for changing curriculums, and accessibility to the buildings. Traffic patterns for vehicles and pedestrians were addressed along with the expansion of the utility systems to accommodate the new construction. Open space to buffer various land use areas still maintained a high priority in the design.

The master plan provided a basis to continue growth at the Naval Academy as conditions and curriculums change. If kept up to date, the document can anticipate the needs and requirements of the academic community.

8.3 CBC Port Hueneme

The Construction Battalion Center (CBC) at Port Hueneme, California, whose mission is to support construction battalions is currently updating their master plan. The EFD contracted with an Architect-Engineer firm to provide a revised document at a cost of $425,000. The work began in September 1985 with the revision of the facility planning documents for the base. The plan is presently approaching its 100 percent review. This follows the general schedule of approximately 14 months to complete a master plan.

The main features of the base include a harbor, battalion headquarters facilities, training facilities, supply facilities, housing, and recreation facilities. The harbor is owned by the Navy, but is also utilized by the Oxnard Harbor District and is the western port for Mazda. The base also provides support to deployed battalions in various countries throughout the world.

In the development of the master plan, emphasis is being placed in two areas; encroachment and recreation (1). Various facilities are being planned and constructed along the outer perimeters of the base to stop possible encroachment by the surrounding community. The current offices for Morale, Welfare, and Recreation are decentralized on the base. The concept is to centralize those facilities between the golf course and the enlisted barracks to provide a recreation corridor.

Also, the current layout of the base places the barracks directly across the street from the industrial area. A concept has been developed to create a greenbelt thru the middle of the

base to separate these areas. Recreation space such as a bike path would be provided and the result would increase the aesthetics of the area.

The planners for the CBC are attempting to balance the industrial requirements for the base and provide the personnel with an attractive area in which to live and work.

8.4 Cases Conclusion

As can be seen from the previous descriptions, each base has a different character and makeup that must be accommodated in the master plan. The emphasis of the plans are not consistent from base to base and the constraints vary dramatically. Each master plan must be approached with an "open mind and fresh ideas".

CHAPTER NINE

CHALLENGES

9.1 Challenges Being Met

After reviewing some of the inherent problems in the planning process and discussing the work involved in the development of a master plan, it is apparent that the master plan can be considered a "snapshot" of what is currently happening at the activity and what is going to happen. Over the past several years, one of the main challenges faced by master planners is that the master plan is essentially out of date before it is approved. In some cases, the development can take up to two years.

One change being discussed is to shorten the development time by updating only specific parts of the master plan (18). Various aspects of the plan are consistent and do not need to be updated each time the plan is revised. For example, the history of the area and natural constraints such as flood plains and the geographic aspects remain constant. The basic idea is to write these sections of the plan to be permanent and only update the constraints such as AICUZ that have changed. The master plan would be arranged for easy removal of any section for revision.

Another challenge which has been plaguing the master plan development process is the experience of the planners. Due to

the workload at the EFD, only ten to fifteen percent of the master plans are developed in-house. The rest are contracted to Architect-Engineer firms. This challenge is being overcome as more firms are gaining experience in master plan development. Currently it is estimated that the Architect-Engineer firms are nearly as experienced as the in-house EFD teams (18).

One of the concerns in the organization of NAVFACENGCOM was the two parallel systems for planning. Essentially there was one chain of review for the basic facility requirements involved in the Shore Facilities Planning System. Another chain of command worked with the installations planning, specifically the development of the proposed land use and siting approvals. These two chains interacted only so far as the individuals were willing to communicate with each other. Since the development of a master plan depends on reliable, accurate information from the Shore Facilities Planning System, NAVFACENGCOM recently reorganized the two chains into a team concept. Each team is involved in updating and approving the basic facility requirements and performing the installations planning. With the team concept, communication and coordination are greatly improved. The result should be a higher quality planning system, especially for master planning of the activity.

Policy for the capital improvements plan is currently under revision (18). The CIP focuses on all the major projects that can improve the activity and meet its needs. Those projects that are within certain program years will be more fully

emphasized to include any relationships of interest. The emphasis on the projects will conform closely to the predesign programming discussed earlier.

Until recently, if the master plan was to be developed by an Architect-Engineer firm, two contracts would be administered, not necessarily with the same firm. One contract would cover the updates of the facility planning documents while the other would be for the actual development of the master plan based on the updated FPD's. This resulted in identical work being done by two firms in terms of background information from the commands. Due to a policy change, one contract is now issued to cover all the elements of development. The contract eliminates the duplication of effort and allows one firm to control development. Better coordination is achieved which results in a better product.

9.2 Deficiencies

Even though some of the challenges in master planning are being met with innovative thinking, some inherent problems still remain. Some complaints that are generated include the fact that master planning is too complicated, covers too many areas of concern and the results are very vague. As can be seen in Appendix G (11:4810-4), the amount of data that is collected to update the facility planning documents and the master plan is staggering. There is no way around this problem except to

ensure that the plan will be utilized by the activity as a working document. It should contain all the vital aspects of the base and provide logical relationships between various structures. The better the plan, the more utilized it will be by the activity planners.

One deficiency that directly relates to the amount of data used is the "garbage in, garbage out" scenario. Since many data sources are utlized in the development of a master plan, it is imperative that the data be reliable to guarantee that the plan is not "garbage". Unfortunately, as noted when the planning process was discussed, no plan can be 100 percent accurate because of the difficulty in predicting the future. Missions do change along with the base loading of an activity.

Another complaint is that the planning system, including the master plan, is not capable of handling rapid change (22:298). It is perceived to be very inflexible. Its long range emphasis may inhibit any short range objectives that must be reached.

A major challenge presented to the planner is the organization of a base. During the last two decades, bases have been split more and more into tenant commands. This trend may increase the effectiveness of the individual command, but creates havoc for coordination and planning. Instead of one point of control for the base, there are dozens. Each command must be interviewed and its mission and needs assessed. This increases the time involved in preparing a master plan tremendously. Yet

it is a vital step to ensure a valuable end result. Another aspect to this challenge is the rotation of key individuals in the commands. Usually if good documentation is kept, this will only be a small hurdle. Unfortunately, there are cases where a new commanding officer has required complete revision of a plan to emphasize aspects not considered as important by his or her predecessor.

Perhaps the most important variable in the planning process is politics. The most obvious source of politics is the U.S. Congress. When the documentation for a military construction project leaves the hands of the Navy, there is no guarantee that the project will be funded or remain in its current form. Politics will also play a role at the local activity level. For example, the siting of various facilities at the CBC in Port Hueneme to dissuade encroachment can be considered on a political level.

CHAPTER TEN

CONCLUSION

10.1 Conclusion

The development of a U.S. Naval shore activity master plan, from the first step of data collection to the final approval by the Chief of Naval Operations, is a complex process. It requires an intense effort to analyze requirements and constraints, evaluate alternatives, produce an ideal model, and adapt that model to the site. Just the analysis of the facilities requirements alone may involve enormous amounts of data gathering to ensure that the final document is usable.

Along with the complexity in developing a master plan, it is also sometimes difficult for an outside organization to determine the interrelationships between different commands. Many activities have an intricate web of functions that support each other or should be isolated from each other. In the time allowed to develop a plan, the planners may overlook some areas and eventually this may impact on the final outcome of the plan.

Yet, even with these considerations, excellent master plans are produced by both in-house Engineering Field Division teams and Architect-Engineer firms. These plans are the product of good coordination and communication between the users and the planners. They show that user input to the master plan in

terms of missions and needs is a vital step in plan development. With this input, the master plan becomes a valuable working document for the activity. It provides a framework on which to build all facilities planning proposals and recommendations. It also provides an ultimate goal in terms of land use for the activity and, occasionally, the surrounding community. One example would be the effect of the Land Use Compatibility Program on nearby urban developments.

Master planning should be a continuous process. Efforts should be made at the activity and EFD levels to provide updated inputs to the Shore Facilities Planning System on a periodic basis. These updates will reflect the changing needs of the users and provide a solid base when updating the SFPS in preparation for master plan development.

Overall, master plans are invaluable guides for planners. They provide a current "snapshot" of the activity and attempt to realistically predict the future. They also provide continuity for planners as the command structure and personnel change. Master plans are documents that deserve emphasis at U.S. Naval activities.

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APPENDIX A

OUTLINE FOR THE PROPOSED MASTER PLAN NAVAL COMPLEX, JACKSONVILLE, FLORIDA

OUTLINE
FOR THE
NAVAL COMPLEX JACKSONVILLE MASTER PLAN

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- II. Site Analysis
  - A. Natural Environment
    - 1. Geology, Topography and Soils
    - 2. Flood Hazards
    - 3. Wetlands
    - 4. Vegetation and Wildlife
    - 5. Land Management
  - B. Man-made Environment
    - 1. History and Historical Items
    - 2. Circulation
    - 3. Utilities
      - a. Electrical
      - b. Air Conditioning
      - c. Street Lighting
      - d. Natural Gas
      - e. Potable Water
      - f. Steam
      - g. Sanitary Sewage Collection and Treatment
      - h. Cathodic Protection
      - i. Storm Drainage
      - j. Refuse Collection/Disposal
      - k. Communications/Telephone
    - 4. Buildings and Structures
    - 5. Operational Constraints
      - a. Explosive Safety Quantity Distance (ESQD) Arcs
      - b. Electromagnetic Radiation (EMR) Hazards
      - c. Hazardous Waste Storage Facilities/Landfills
  - C. Site Development Potential
- III. Requirements Analysis
  - A. Methodology
  - B. Command Structure, Missions and Locations
  - C. Personnel Loading
  - D. Current and Proposed Operations
  - E. Program Analysis (By Category Code)
  - F. Future Mission Changes
  - G. Impact on Utilities
  - H. Conclusions
- IV. Concept Development
  - A. Assumptions
  - B. Ideal Functional Relationships
  - C. Existing Functional Relationships
  - D. Proposed Functional Relationships

V. Land Use and Site Development
    A. Existing Land Use
    B. Proposed Land Use
    C. Proposed Supporting Utilities
    D. Circulation
        1. Vehicular Circulation and Parking
        2. Bikeway Development
        3. Pedestrian
    E. Exterior Architecture
        1. Architectural
        2. Landscaping
        3. Visual Communications
    F. Encroachment Potential
VI. Capital Improvements Plan
    A. Planning Objectives
    B. Project Identification
    C. Detailed Project Description
    D. Demolition Plan
VII. Appendices
    A. Preliminary Environmental Assessment

APPENDIX B

OUTLINE FOR SUGGESTED DATA COLLECTION CONSIDERATIONS

MASTER PLAN DATA GATHERING

This outline has been developed to assist in the data-gathering effort needed to support the master plan. Sections I and II deal with the overall station situation, and should be completed by station planning personnel. Section III is more specifically directed to individual departments and should be detached and distributed to each organizational unit for response and returned to the designated point of contact.

If existing material, such as marked-up or updated copies of the master plan, which provides the necessary information is available, it should be attached. If any additional information not specifically addressed is considered of importance to the planning process, it may also be attached.

I. Overall station information (to be provided to master planning team by station planning department).

1. General development, station, vicinity and regional maps.
2. Regional or vicinity planning documents.
3. Circulation and parking information (including intersection geometry or capacity problems, parking deficiencies, and accident information or areas identified as having accident potential).
4. Utility maps and summaries of utilities condition and suitability.
5. Station land management plan or forestry plan. (Items of special interest include: floodplains/wetland area designations and maps; maps illustrating floral and faunal distribution and density; soil types and distribution; hydrologic data; illustrations and data pertinent to sites of archeologic or historic interest; and any data pertinent to physical features of unusual occurrence or importance.)
6. Organizational charts.
7. Mission and tasks statements.
8. Station history (OPNAV 5750-1, Command History).

9. Base loading figures and projections by department and tenants (include dependents and retired personnel, if possible).

10. Host-tenant agreements and interservice support agreements.

11. Existing explosives, radiological or electromagnetic safety data, including existing magazine capacities and waivers.

12. MILCON projects and justification.

13. Environmental impact documents pertaining to completed and/or ongoing construction projects that would have relevance to establishing the environmental setting of the station (including any MOUs concerning environmental mitigation or enhancement).

II. Station analysis (by station planning personnel or other central point of contact).

1. Describe any problem areas which affect the station as a whole. This may include regional or community problems, such as encroachment or development trends.

2. Describe any existing positive or beneficial relationships between the station and the neighboring community.

3. Describe the interrelationships between the various station departments and tenants as they affect operations and work flow. Schematic diagrams should be included where appropriate.

4. Describe any additional problem areas or factors which could be included in the master planning analysis. Include "crystal ball" or wishful thinking ideas for improvement of the station and its ability to perform its missions.

III. Departmental analysis (by each department).

1. Name of department.

2. Describe the function of the department and its sub-units, including operational and work flow schematics, as required. Relate the departmental function to the context of the overall station mission.

3. Tabulate the number of personnel assigned to the department (officer, enlisted, civilian) and, where possible, identify job type, such as administration, clerical, technician, instructor, etc.

4. Describe current workload of the department in appropriate units. Include any anticipated changes in workload and their affects on personnel, facilities, etc.

5. Using station or general development maps, indicate facilities used by the department. Include remarks on facility condition and suitability. Particular attention is required to note facilities handling or storing ordnance with regard to capacities, locations, ESQD arcs, existing or proposed waivers, and any additional unwaivered situations.

6. Describe any MCON projects which will affect the department or its functions. Include both programmed and unprogrammed projects.

7. Describe any "wishful thinking" type projects which would increase the ability of the department to carry out its functions more efficiently, or would increase the range of service provided.

APPENDIX C

CHECKLIST FOR THE BASE EXTERIOR ARCHITECTURE PLAN

NAS JACKSONVILLE, FLORIDA

Introduction

The following outline of design guideline elements is provided to serve as a checklist for project reviewing groups (engineers in charge of projects, architectural review boards, etc.) The intent of the checklist is not to provide detail solutions but to ensure that all elements of the Base Exterior Architectural Plan have been addressed in all future projects. Each important guideline element has been outlined and should be cross referenced with the appropriate guideline section for detailed compliance with the plan. A rating of acceptable or unacceptable will be given to each category and overall project approval should be based on these ratings.

A – ACCEPTABLE

U – UNACCEPTABLE

Buildings

Structure

	Submission					
	1		2		FINAL	
Passive solar design	A	U	A	U	A	U
° overhangs						
° windows						
° operable						
° tinted						
° shaded						
Entrances						
° clearly defined						
° protected from elements						
Service Areas						
° dumpster locations shown						
° adequate screening						
Construction/Materials						
° minimum maintenance						
° compatible materials						
° subtle colors						
° compatable colors						
Building Scale						
° appropriate for use						
° appropriate for surroundings						
Compatible roof type						
Mechanical Equipment screened						

Siting

Complete site analysis done						
Microclimate consideration						
° no "hot pockets"						
° solar access						
° sited for breeze channeling						
° take advantage of amenities						
° related to surrounding uses						
° planned expansion						
Entrance and site barrier-free						

Roads and Parking

	Submission 1		2		FINAL	
Compatible with hierarchy system (roads)						
Pedestrian access along roads						
Median & buffer on roadways						
Planting along roadways						
Parking separate from building(s)						
Limited access points						
Parking circulation (within lot)						
Separation from roads						
Pedestrian access through parking						
Buffer islands						
Parking lot trees/hedges						
Compact car spaces						
Motorcycle parking						
Curbing in parking areas						
Coordination with lighting						

Planting

Natural Systems

Existing vegetation preserved						
Native character						
Varied scale						
Green belts						

Street Systems

Appropriate species						
Spacing						
Quantity						
Varying scale veg. (where needed)						

Specialized Areas

Appropriate species						
"Design intent" conveyed						
Varying scale veg. (where appropriate)						

Liter/hazard plants used where not problem						
Planting to scale buildings						
Planting for screening of uses						

Energy Considerations

Summer shade						
Sun radiation in winter						
Wind channeling						
Winter insulating plants						

Walks and Bikeways

	Submission 1		2		FINAL	
User need analysis	☐	☐	☐	☐	☐	☐
Placement according to need	☐	☐	☐	☐	☐	☐
Hierarchy of walks	☐	☐	☐	☐	☐	☐
Hierarchy of bikeways	☐	☐	☐	☐	☐	☐
Shaded/Sunny areas	☐	☐	☐	☐	☐	☐
Parking areas	☐	☐	☐	☐	☐	☐
Buffer from roads & parking	☐	☐	☐	☐	☐	☐
Handicapped consideration						
° drop-curbs/continuous grade transition	☐	☐	☐	☐	☐	☐
° smooth, stable paving on main routes	☐	☐	☐	☐	☐	☐
Crosswalk identification	☐	☐	☐	☐	☐	☐
Buffered from buildings	☐	☐	☐	☐	☐	☐
Placement in amenity areas	☐	☐	☐	☐	☐	☐

Plazas and Courtyards

Identification of potential area(s)	☐	☐	☐	☐	☐	☐
Microclimate considerations						
° protection from winter winds	☐	☐	☐	☐	☐	☐
° provision for summer breezes	☐	☐	☐	☐	☐	☐
° shaded areas	☐	☐	☐	☐	☐	☐
° sunny areas	☐	☐	☐	☐	☐	☐
Amenity orientation (where appropriate)	☐	☐	☐	☐	☐	☐
Scale reflects need and surroundings	☐	☐	☐	☐	☐	☐
Site furnishing needs identified						
° benches	☐	☐	☐	☐	☐	☐
° trash receptacles	☐	☐	☐	☐	☐	☐
° phones	☐	☐	☐	☐	☐	☐
° bike racks	☐	☐	☐	☐	☐	☐
Furnishings & accessories well designed	☐	☐	☐	☐	☐	☐

Signage

Analysis of need	☐	☐	☐	☐	☐	☐
Identification of types	☐	☐	☐	☐	☐	☐
Compatible style/materials						
° color	☐	☐	☐	☐	☐	☐
° lettering	☐	☐	☐	☐	☐	☐
° materials	☐	☐	☐	☐	☐	☐
Hierarchy of signage	☐	☐	☐	☐	☐	☐
Signs properly sited	☐	☐	☐	☐	☐	☐

Lighting

	Submission					
	1		2		FINAL	
Analysis of need						
Identification of types						
Coordination with other lighting						
Compatible style/materials						
Hierarchy of lighting						
Light level						
Source (eg. high pressure sodium)						
Energy consideration						
Long term cost						
Placement						
Scale						
Detailing						
° shape						
° materials						
° color & finish						
Maintenance						

Site Furnishings

Site furnishing needs analyzed						
° benches						
° seating walls						
° trash receptacles						
° dumpsters						
° phones						
° bus stops						
° bike racks						
° other						
Furnishings coordinated						
Furnishings properly sited						
Durable materials						
Ease of handicapped access						

Walls and Fencing

Fencing/wall types defined						
° security						
° barrier						
° specialty						
° screening						
° privacy						
° recreation						
° soil retention						
Coordination between types						
Compatible with buldings/surroundings						
Walls/fencing well sited						
Durable materials						
Design aesthetically pleasing						

Utilities

	Submission					
	1		2		FINAL	
Underground placement if possible	☐	☐	☐	☐	☐	☐
Sensitive siting	☐	☐	☐	☐	☐	☐
Cosolidation of lines	☐	☐	☐	☐	☐	☐
Consistent pole types	☐	☐	☐	☐	☐	☐
Vegetative buffering/screening	☐	☐	☐	☐	☐	☐
Proper alignment	☐	☐	☐	☐	☐	☐
Coordination of underground utilities with planting	☐	☐	☐	☐	☐	☐

APPENDIX D

MATRIX FOR LAND USE COMPATIBILITY IN NOISE AREAS

LAND USE COMPATIBILITY IN NOISE AREAS

LAND USE CATEGORY	SLUCM Code	Noise Zone 1	Noise Zone 2		Noise Zone 3	
		Day-Night Average Sound Level (Ldn) 60–65	65–70	70–75	75–80	80–85
Residential - Single Family, Duplex	11x	☐	░	▦	▥	▥
Residential - Multifamily, Dormitories, etc.	11x, 12, 13, 19	☐	░	▦	▥	▥
Residential - Mobile Homes	14	░	▦	▦	▥	▥
Transient Lodging	15	☐	░	▦	▦	▥
Industrial - Service & Distributive	39	☐	░	░	▦	▥
Industrial - Manufacturing	21-34	☐	☐	░	░	▦
Industrial - Manufacturing (Noise Sensitive)	35	░	░	▦	▦	▥
Commercial - Wholesale Trade Some business services	51, 64, 66	☐	☐	░	░	▦
Commercial - Retail Trade, Movie Theaters, Eating & Drinking	53, 58	☐	░	░	▦	▥
Commercial - Some Retail Trade (not noise sensitive)	52	☐	☐	░	░	▦
Office Buildings (Personal, Business, and Professional Services)	61-63, 65, 69	☐	░	░	▦	▥

Clearly Compatible ☐

Normally Compatible ░

Clearly Incompatible ▥

Normally Incompatible ▦

LAND USE COMPATIBILITY IN NOISE AREAS

LAND USE CATEGORY	SLUCM Code	Noise Zone ◁ 1	2		3 ▷	
		Day-Night Average Sound Level (Ldn)				
		60–65	65–70	70–75	75–80	80–85
Classrooms, Libraries, Churches	68, 711	░	▥	▥	█	█
Hospitals, Medical Facilities, Nursing Homes (24hr occupancy)	651	░	▥	▥	█	█
Auditoriums, Concert Halls	721	▥	▥	█	█	█
Outdoor Music Shells	721	▥	█	█	█	█
Outdoor Sports Arenas, Outdoor Spectator Sports	722	░	▥	▥	█	█
Playgrounds, Neighborhood Parks, Active Sport Recreational Areas	761, 762	░	▥	▥	█	█
Golf Courses, Riding Stables, Water Recreation	741x, 743, 744	░	░	▥	▥	█
Outdoor - Frequent Speech Communication		▥	▥	█	█	█
Outdoor - Infrequent Speech Communication		☐	☐	░	▥	█
Agricultural (except livestock), Mining, Fishing	81-85	☐	☐	░	▥	█
Livestock Farming, Animal Breeding	815-817	☐	☐	░	▥	█

Clearly Compatible ☐

Normally Compatible ░

Clearly Incompatible █

Normally Incompatible ▥

NOTES FOR MATRIX ON LAND USE COMPATIBILITY IN NOISE AREAS

1. CLEARLY COMPATIBLE: The noise exposure is such that the activities associated with the land use may be carried out with essentially no interference from aircraft noise. (Residential areas: both indoor and outdoor noise environments are pleasant.)

2. NORMALLY COMPATIBLE: The noise exposure is great enough to be of some concern, but common building construction will make the indoor environment acceptable, even for sleeping quarters. (Residential areas: the outdoor environment will be reasonably pleasant for recreation and play.)

3. NORMALLY INCOMPATIBLE: The noise exposure is significantly more severe so that special building construction is often necessary to minimize adverse impacts on people and reduce interference with performance of normal activities. (Residential areas: barriers are sometimes erected between the site and prominent noise sources to improve the outdoor environment; sound attentuation is recommended in some buildings.)

4. CLEARLY INCOMPATIBLE: The noise exposure at the site is so severe that construction costs to make the indoor environment acceptable for performance of activities is significantly more expensive. (Residential areas: the outdoor environment would be significantly impacted for normal residential use.)

5. SLUCM: Standard Land Use Coding Manual. "x" represents SLUCM category broader or narrower than, but generally inclusive of, the category described.

6. The compatibility matrix has been determined by a number of noise sensitivity factors including: speech communication needs; subjective judgements of noise compatibility and relative noisiness; need for freedom from noise intrusions; sleep sensitivity criteria; accumulated case histories of noise complaint experience; and typical noise insulation provided by common types of building construction.

7. For many land uses, higher levels of exterior noise exposure may be acceptable provided there is a proper degree of building noise insulation. Such tradeoffs are possible for land uses where indoor activities predominate.

APPENDIX E

PUBLIC LAWS AND EXECUTIVE ORDERS THAT MAY IMPACT MASTER PLANS

THE NATURAL ENVIRONMENT - PLANNING REFERENCES

1. Public Law 91-190 of 1 January 1970, "The National Environmental Policy Act of 1969 (NEPA)"

2. Public Law 92-500, "The Federal Water Pollution Control Act Amendments of 1972"

3. Public Law 92-532, "The Marine Protection, Research and Sanctuaries Act of 1972"

4. Public Law 92-583, "The Coastal Zone Management Act of 1972"

5. Public Law 93-205, "The Endangered Species Act (Amended by PL 95-632, 96-159 and 97-304)

6. Public Law 95-87, "Prime and Unique Farmlands

7. Executive Order 11472 of 29 May 1969 (established the Environmental Quality Council and the Citizens' Advisory Committee on Environmental Quality).

8. Executive Order 11752 of 17 December 1973 (provided for protection and enhancement of the quality of air and water resources; superceded to EO 11507).

9. Executive Order 11514 of 5 March 1970 (supported NEPA by further providing policy and responsibilities related to the protection and enhancement of environmental quality).

10. Executive Order 11593 of 13 May 1971 (provided for the preservation of historical, architectural and archaeological resources).

11. Executive Order 11988 of 24 May 1977 (required agencies to reduce the risk of flood loss and to minimize the impact of floods on human safety, health and welfare).

12. Exectuive Order 11989 of 24 May 1977 (Governs the closure of public lands to off-road vehicle use)

13. Executive Order 11990 of 24 May 1977 (required agencies to minimize the destruction loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands).

14. Council on Environmental Quality NEPA Implementation Regulations, published Federal Register 29 November 1978 (established uniform procedures/regulations for implementing NEPA).

15. DOD Construction Criteria Manual, DOD 4270.1-M of 1 October 1972 (incldDuing 1978 "Floodplain" addition).

16. DOD Directive 5100.50 of 24 May 1973 (established pricedures and assigned responsibility for the use of DOD resources in the protection and enhancement of environmental quality and established the DOD Committee on Environmental Quality).

17. DOD Directive 6050.1 of 19 March 1974 (established policy and provided guidance on DOD administration of NEPA).

18. DODINST 4165.59 of 29 December 1975, "DOD Implementation of the Coastal Zone Management Act of 1972"

19. OPNAVINST 11000.14 of 25 September 1976, "The Coastal Zone Management Act"

20. OPNAVINST 6240.3E of 5 July 1977, "The Environmental Protection Manual"

21. NAVFACINST 11010.66 of 2 September 1980, "Intergovernmental Coordination of Land and Facility Plans, Projects, and Programs"

22. NAVFACINST 11010.44D of 19 November 1979, "Shore Facilities Planning Manual"

23. NAVFACINST 11010.63A of 26 December 1979, "Planning Services for Navy and Marine Corps Shore Installations"

24. NAVFACINST 11010.57B of 9 January 1978, "Site Approval of NAval Shore Facilities"

25. NAVFAC P-73 of June 1976, "Real Estate Procedural Manual"

26. DOD Directive 4700.1 of 6 Nov 1978, "Natural Resources - Conservation and Management"

27. DOD Directive 6050.2 of 21 Aug 1974, "Use of off-road vehicles on DOD land"

28. DODINST 5000.13 of 13 Dec 1976, "Natural Resources - The Secretary of Defense Conservation Award"

29. MCO P11000.8 of 7 Apr 1975, "Real Property Facilities Manual, Vol. V, Environmental Management"

30. MO-100.1 of July 1982, "Natural Resources Land Management"

31. MO-100.2 of Dec 1981, "Forest Management"

32. MO-100.3 of Feb 1982, "Fish and Wildlife Management"

33. MO-100.4 of Feb 1982, "Outdoor Recreation and Cultural Values"

APPENDIX F

SAMPLE PRELIMINARY ENVIRONMENTAL ASSESSMENT FORM

SOUTHERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND

PRELIMINARY ENVIRONMENTAL ASSESSMENT (PEA)

This assessment prepared by Southern Division Naval Facilities Engineering Command, in accordance with OPNAVINST 6240.3E Change 1 of 5 November 1979 in compliance with Section 102(2)(c) of the National Environmental Policy Act of 1969 and all subsequent amendments.

Submitting DOD Component: Department of the Navy

Installation:

Project Title:

Date of Submission:

1. Introduction

   a. Project Description:

   b. Existing Environment of Proposed Site:

2. Relationship of Proposed Action To Land Use Planning Policies and Controls for the Affected Area.

		Conforms With	No Plans For Area	Conflicts With
a.	Station Master Plan	☐	☐	☐
b.	Clean Air Act, as amended	☐	☐	☐
c.	Federal Water Pollution Control Act, as amended	☐	☐	☐
d.	Solid Waste Disposal Act, as amended	☐	☐	☐
e.	Other Land Use Plans	☐	☐	☐

3. The Probable Environmental Impact of the Proposed Action

The proposed action will have a potentially significant effect on the following:

Item	Primary	Secondary	Favorable	Adverse	No Effect
Traffic	☐	☐	☐	☐	☐
Energy Supply	☐	☐	☐	☐	☐
Community Facilities	☐	☐	☐	☐	☐
Schools	☐	☐	☐	☐	☐
Waste Treatment Facilities	☐	☐	☐	☐	☐
Utilities	☐	☐	☐	☐	☐
Land Management	☐	☐	☐	☐	☐
Population Patterns	☐	☐	☐	☐	☐
Ambient Noise	☐	☐	☐	☐	☐
Air Quality	☐	☐	☐	☐	☐
Water Quality	☐	☐	☐	☐	☐
Solid Waste Disposal	☐	☐	☐	☐	☐
Fish and/or Wildlife	☐	☐	☐	☐	☐
Area Appearance	☐	☐	☐	☐	☐
Other (See Attachment____)	☐	☐	☐	☐	☐

4. Alternatives to the Proposed Action

☐ Proposed action only alternative considered; explanation in Attachment____.

☐ No action. The effects of this alternative are discussed in Attachment____.

☐ Various alternatives and their effects are discussed in Attachment ____.

5. Any probable Adverse Environmental Effects Which Cannot Be Avoided Should the Proposed Action Be Implemented

☐ No adverse effects on the environment are anticipated.

☐ Probable adverse effects are described in Attachment____.

6. Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity.

☐ No change in short-term use.

☐ No change in the maintenance and/or enhancement of long-term productivity.

☐ Adverse effects on the environment will occur only during the construction period and these will/will not create permanent or long-lasting adverse effects.

☐ The proposed action will enhance/expend the short-term use of the environment by:

Enhance	Expend	
☐	☐	Air and water quality, noise
☐	☐	Area appearance
☐	☐	Utilities
☐	☐	Operational efficiency
☐	☐	Habitability of existing facilities
☐	☐	Other:____________________

☐ Long-term productivity will be enhanced/expended by changes in

Enhance	Expend	
☐	☐	Air and water quality
☐	☐	Land use
☐	☐	Utility requirements
☐	☐	Operational efficiency
☐	☐	Use of natural resources
☐	☐	Other:______________________________

7. Irreversible and Irretrievable Commitments of Resources Which Would Be Involved in the Proposed Action Should It Be Implemented

☐ No significant irreversible or irretrievable commitment of resources.

☐ No destruction of identified archeological or historical sites.

☐ No effect on known endangered species of wildlife.

☐ No significant change in land use.

☐ Potentially significant irreversible or irretrievable commitments of resources are discussed in Attachment____.

☐ Other:____

8. Considerations That Offset the Adverse Environmental Effects

a. Considerations that offset adverse environmental effects are listed in Attachment____.

b. Cost benefit analysis of proposed action is Attachment____.

9. Summary

☐ It is concluded that the proposed action will have no significant adverse effects on the environment.

☐ There has not been, nor is there currently, any known controversy concerning the proposed action.

☐ Based on this assessment, it is concluded that:

  ☐ An environmental assessment must be prepared prior to implementation of the proposed action.

  ☐ An environmental statement must be prepared prior to implementation of the proposed action.

  ☐ This is a categorically excluded action which does not normally significantly impact on the quality of the human environment.

☐ Site visit was not made to prepare assessment for the following reasons:

- ☐ Information obtained phone.
- ☐ Previous knowledge of site.
- ☐ Sufficient written or photographic information available.
- ☐ Other:____

APPENDIX G

MATRIX OF DATA TO BE COLLECTED FOR THE SHORE FACILITIES PLANNING SYSTEM AND MASTER PLANS

DATA TO BE COLLECTED	SOURCE DOCUMENT	WHO PREPARES	USED FOR: BFR	ER	FRP	MP
ACTIVITY GENERAL INFORMATION						
MISSION, FUNCTIONS AND TASKS	ACTIVITY MISSION FUNCTION TASK DIRECTIVE	MAJOR CLAIMANT	X		X	X
	OFFICIAL CORRESPONDENCE ASSIGNING WORKLOAD AND FUNCTIONS	CNO MAJOR CLAIMANTS	X		X	X
HOST TENANT RELATIONSHIPS	HOST-TENANT AGREEMENTS	ACTIVITY	X			X
	ACTIVITY GENERAL INFORMATION	EFD-FROM MAGIC	X		X	X
	INFORMAL AGREEMENTS	ACTIVITY				X
	INTER-ACTIVITY AGREEMENTS	ACTIVITY	X		X	X
	DEPARTMENT ORGANIZATION CHARTS	ACTIVITY	X		X	X
	DEPARTMENT FUNCTIONS	ACTIVITY	X		X	X
BASE LOADINGS						
PERSONNEL LOADING						
ACTIVE DUTY NAVY/MARINE	SHORE FACILITIES PLANNING SYSTEM BASE LOADING REPORT	CNO	X			X
	MANPOWER AND PERSONNEL MANAGEMENT INFORMATION SYSTEM REPORT R-316	CNO	X			
CIVILIANS	SFPS BLS	ACTIVITY INPUT	X			X
RESERVES AT CENTERS	INACTIVE OFFICER AND ENLISTED STRENGTH BY UNIT AND NRTC	CNAVRES	X			

DATA TO BE COLLECTED	SOURCE DOCUMENT	WHO PREPARES	USED FOR:			
			BFR	EE	FRP	MP
MEDICAL PERSONNEL	BUMED REPORT 11010.1 PERSONNEL LOADING PLAN	COMNAVMEDCOM	X			
OTHER SERVICES	NO SOURCE AVAILABLE	ACTIVITY	X			
RETIRED PERSONNEL	DOD STATISTICAL REPORT ON THE MILITARY RETIREMENT SYSTEM	OSD/AIR FORCE	X			X
FAMILY HOUSING	FAMILY HOUSING SURVEY	CNO/NAVFAC				X
UNACCOMPANIED PERSONNEL	UNACCOMPANIED PERSONNEL HOUSING SURVEY	CNO/NAVFAC	X			X
	DINING FACILITIES--NAVSUP FORM 27 (WEEKLY PARTICIPATION RECAP)	NAVSUP	X			
PUBLIC WORKS PERSONNEL	NAVFACINST 11014.40C REAL PROPERTIES MAINTENANCE ACTIVITIES DATA REPORT	NAVFAC	X			
AIRCRAFT						
HOMEPORTED	SFPS BLS	CNO	X			X
	AIRCRAFT PROGRAM DATA FILE	CNO	X			X
TRANSIENT	SFPS BLS (TOTALS ONLY)	CNO	X			X
	ACTIVITY RECORDS	AIR OPS MAJOR CLAIMANT	X			X
IMO/TMO FACTORS	OPNAVINST C5311.3, MANPOWER PLANNING FACTORS FOR AVIATION ACTIVITIES	CANCELLED	X			

DATA TO BE COLLECTED	SOURCE DOCUMENT	WHO PREPARES	USED FOR: BFR	EE	FRP	MP
MAINTENANCE	INDIVIDUAL JUSTIFICATION REQUIRED	NAVAIR MAJOR CLAIMANT	X			X
DEPOT MAINTENANCE		NAVAVNLOGCEN	X			
SHIPS						
HOMEPORTED	SFPS BLS	CNO	X			X
	OPNAVNOTE 3111, HOMEPORT FORECAST OF SHIPS	CNO	X			X
TRANSIENT	PORT SERVICES OFFICERS' RECORDS	ACTIVITY	X			X
SHIP OVERHAULS			X			X
EQUIPMENT						
AUTOMOTIVE	AUTOMOTIVE/CONSTRUCTION EQUIPMENT MANAGEMENT INFORMATION SYSTEM (ACEMIS)	FACSO	X			
AIRFIELD PAVEMENT LIGHTING	OPNAVINST 3721.1G AIR FACILITIES MANUAL					X
SUPPLY						
WAREHOUSE	SUPPLY FACILITY/STORAGE SPACE MANAGEMENT REPORTS	NAVSUP	X			
AMMUNITION	AMMUNITION BASIC STOCK LEVEL ALLOWANCE	NAVSEA	X			
FUEL CONSUMPTION	ACTIVITY RECORDS	AUTOMOTIVE DEPT SQUADRONS FUELS DEPT	X		X	X

DATA TO BE COLLECTED	SOURCE DOCUMENT	WHO PREPARES	USED FOR: BFR	ER	FRP	MP
BULK FUEL		NAVY PETROLEUM OFFICE	X			
NEW WEAPONS SYSTEMS	OFFICIAL DOCUMENTS PROVIDED AS REQUIRED	SYSTEMS COMMAND MAJOR CLAIMANTS	X	X	X	X
LONG-RANGE DEVELOPMENT PLANS	OFFICIAL DOCUMENTS PROVIDED AS REQUIRED	MAJOR CLAIMANTS				X
MISCELLANEOUS						
RATCC	OPNAVINST 3721.1G AIR TRAFFIC FACILITIES MANUAL	CNO	X			
PHOTOGRAPHIC BUILDING	OPNAVINST 3150.2Q AUTHORIZED PHOTOGRAPHIC LABS ASHORE	CNO	X			
GRAPHIC DATA						
FACILITIES CRITERIA:						
	NAVFAC P-80		X	X	X	X
	DESIGN MANUALS		X	X	X	X
	DEFINITIVE DESIGNS		X	X	X	X
MAPS:						
EXISTING UTILITY MAPS	EXISTING AS BUILTS	ACTIVITY PWO				X
OFF BASE ZONING	COMMUNITY PLANNING DEPARTMENTS	ACTIVITY				X
SITING CRITERIA:						
ORDNANCE	OP-5	NAVSEA		X		X

DATA TO BE COLLECTED	SOURCE DOCUMENT	WHO PREPARES	USED FOR: BFR	EE	FRP	MP
AIRFIELD SAFETY	NAVFAC P-80	NAVFAC				X
ELECTROMAGNETIC RADIATION HAZARDS	TECHNICAL MANUAL OF ELECTROMAGNETIC RADIATION HAZARDS NAVSEA OP 3565	NAVSEA				X
OTHER SITING DATA						
CIRCULATION AND PARKING	TRAFFIC STUDIES	MTMC (ARMY)				X
ENVIRONMENTALLY IMPORTANT /SENSITIVE AREAS		ACTIVITY				X
AMMUNITION/ORDNANCE MAGAZINE STORAGE	ORDNANCE OFFICERS RECORDS	ACTIVITY		X	X	X
ELECTROMAGNETIC SAFETY PROBLEMS	BASE ELECTRONICS SYSTEMS ENGINEERING PLAN	NAVELEX		X		X
AIRCRAFT OPERATIONS	AIR OPS DEPARTMENT RECORDS	ACTIVITY				X
AIRFIELD SAFETY VIOLATIONS	INDIVIDUAL STUDY REQUIRED	ACTIVITY		X		X
BUILDING INFORMATION						
BUILDING CONFIGURATIONS	AS BUILT DRAWINGS	ACTIVITY		X		X
BUILDING CONDITION	ANNUAL INSPECTION SUMMARY (AIS)	ACTIVITY		X		
	FIRE PROTECTION SURVEYS	EFD		X		
	OTHER STUDIES ON FACILITIES	VARIES		X		

DATA TO BE COLLECTED	SOURCE DOCUMENT	WHO PREPARES	USED FOR:			
			BFR	EE	FRP	MP
OTHER NONGRAPHIC DATA						
STATION HISTORY		ACTIVITY				X
EFD QUESTIONNAIRES	MAILED OUT BY EFD PRIOR TO START OF MASTER PLAN	ACTIVITY				X
DATA CONCERNING THE SURROUNDING COMMUNITY.						
	REGIONAL AND VICINITY PLANNING DOCUMENTS	LOCAL PLNG AGENCIES				X
AVAILABLE COMMUNITY RESOURCES FOR PERSONNEL SUPPORT.	VARIES	ACTIVITY	X		X	X
SERVICES PROVIDED BY COMMUNITY (UTILITIES, SECURITY, ETC.)	VARIES	ACTIVITY	X		X	X
ASSESSMENT OF COMMUNITY /NAVY RELATIONS		ACTIVITY				X
POTENTIAL OR EXISTING ENCROACHMENT PROBLEMS	AICUZ & LUC STUDIES	NAVFAC/EFD				X
	LAND UTILIZATION SURVEYS	ACTIVITY				X
	OTHER AS REQUIRED	ACTIVITY				X

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